NOTICES OF PROPOSED RULEMAKING

Unless exempted by A.R.S. § 41-1005, each agency shall begin the rulemaking process by 1st submitting to the Secretary of State's Office a Notice of Rulemaking Docket Opening followed by a Notice of Proposed Rulemaking that contains the preamble and the full text of the rules. The Secretary of State's Office publishes each Notice in the next available issue of the *Register* according to the schedule of deadlines for *Register* publication.

Under the Administrative Procedure Act (A.R.S. § 41-1001 et seq.), an agency must allow at least 30 days to elapse after the publication of the Notice of Proposed Rulemaking in the Register before beginning any proceedings for adoption, amendment, or repeal of any rule. A.R.S. §§ 41-1013 and 41-1022.

NOTICE OF PROPOSED RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 7. DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIAL ACTION

PREAMBLE

1. **Sections Affected:** / **Proposed Action:**

R18-7-109	Amend
R18-7-201	Repeal
R18-7-201	New Section
R18-7-202	Repeal
R18-7-202	New Section
R18-7-203	Repeal
R18-7-203	New Section
R18-7-204	Repeal
R18-7-204	New Section
R18-7-205	Repeal
R18-7-205	New Section
R18-7-206	Repeal
R18-7-206	New Section
R18-7-207	Repeal
R18-7-207	New Section
R18-7-208	Repeal
R18-7-208	New Section
R18-7-209	Repeal
Appendix A	Repeal
Appendix A	New Appendix
Appendix B	Repeal
Appendix B	New Appendix
Appendix C	Repeal
Appendix C	New Appendix
Appendix D	Repeal

2. **The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):**

   Authorizing statutes: A.R.S. §§ 49-104(B)(4) and (B)(16), 49-152, and Laws 1995, Ch. 232, § 5.

   Implementing statutes: A.R.S. §§ 49-151, 49-152, and 49-282.

3. **The name and address of agency personnel with whom persons may communicate regarding the rule:**

Name: Katheryn A. Cross

Address: Department of Environmental Quality
3033 North Central Avenue #824
Phoenix, Arizona 85012-2809

Telephone: (602) 207-2222 or (800) 234-5677, ext. 2222 (Arizona only)

Fax: (602) 207-2251

4. An explanation of the rule, including the agency's reasons for initiating the rule:

A. Discussion of the Proposed Final Soil Remediation Rule

Purpose of the Proposed Rule. Current A.R.S. Title 49 statutes and rules require contaminated soil to be cleaned up (or remediated). This proposed rule answers the question of "how clean is clean" across all departmental soil cleanup programs. Generally speaking, soil which meets the remediation standards described in the rule is "clean enough."

The purpose of this proposed rule is to establish permanent Department-wide standards applicable to soil remediation activities. A.R.S. § 49-152(A) sets forth a 2-step process to be used in promulgating soil remediation standards: interim and final standards. Today's rule, which contains final standards, completes that 2nd step.

A.R.S. §§ 49-151 and 49-152 do not mandate soil remediation; they set forth the methods by which remediation standards are calculated. The mandate to perform soil remediation is found in the specific program statutes for the Water Quality Assurance Revolving Fund (WQARF) Program; the Underground Storage Tank (UST) Program; the Hazardous Waste Management Program; the Solid and Special Waste Management Program; the Aquifer Protection Permit Program; and any other program under A.R.S. Title 49 that regulates soil remediation. The Department is not creating new duties to remediate with this proposed rule. Rather, this rule sets forth Department-wide remediation standards which are applied in addition to existing remedial program requirements.

Overview of the Proposed Rule. Within certain limits, the proposed rule allows a person cleaning up contaminated soil to choose a remediation standard from a range of 3 acceptable approaches. The choice of remediation standards includes an "off the shelf" or "1-size-fits-all" approach, called the Soil Remediation Levels (SRLs). The SRLs are pre-determined standards. A "customized" approach allows a person to determine a site-specific cleanup standard based on the concentration of a contaminant, the health effects of that contaminant, and the potential for people to come into contact with that contaminant. A 3rd approach allows a site to be cleaned up to a level consistent with naturally occurring contaminants in the soil. This approach is called "cleaning up to background," and like the "customized" approach, is based on site-specific information.

Depending upon the choice of remediation standards, the rule contains other requirements which assure that the standard selected is fully effective in protecting human health and the environment. Generally speaking, the rule is based on the idea of "risk-based remediation" which means that cleanup levels relate to risk to human health and the environment posed by contaminated soil. After risk-based remediation, the resulting site is safe for human contact and is protective of the environment. Risk-based remediation should result in greater cost effectiveness by better matching expenditures to the contamination site posing the greatest amount of risk. The proposed rule only applies to contaminated soil, and the rule will not apply retroactively.

As discussed above, the 1st step to establish soil remediation standards consisted of promulgating the Interim Soil Remediation Standards (interim rule). As required by A.R.S. § 49-152, these rules were promulgated on an emergency basis, but included notice to the public and an opportunity for public comment. The interim rule became effective March 29, 1996, and according to the statutory provisions, remains in effect until the Final Soil Remediation Rule (final rule) is adopted. The statute further requires that the Department adopt the final rule by August 1, 1997.

Background of the Proposed Rule. The interim rule replaced a practice of establishing cleanup standards on a program-by-program basis. Before the interim rule became effective, no 1 set of standards applied across all Departmental soil cleanup programs. The standards that did exist often were based on clean up to background levels or "non-detect." These standards were in many cases difficult or impossible to achieve and when achieved, did not always relate to the risk to human health and the environment posed by the contamination.

Before the Interim Soil Remediation Standards became effective, a person who wanted to remediate contaminated property had to take several steps before starting actual cleanup activities. First, a person needed an understanding of which Departmental regulatory program governed the contamination. After identifying the applicable regulatory program, the cleanup standards themselves had to be determined. This determination frequently took the form of discussion and site-by-site negotiations between the Department and the remediating party. The length of time needed to determine cleanup standards could be brief, or lengthy, depending on the remediation site in question. Even after the actual cleanup efforts were completed under 1 program, it was possible to learn that a 2nd, or a 3rd program also applied to the site in question. Additional program requirements would then be imposed, and the process of determining the cleanup standards under the 2nd or 3rd program would begin.

The regulated community and the Department both realized that this approach was slow and yielded inconsistent results. For instance, the cleanup standard under the Hazardous Waste Management Program might vary from the standard imposed under the Solid and Special Waste Management Program, yet the underlying contamination might be similar. In addition, standards might vary within programs, depending upon differing assessment of factors present and the negotiation process.

The slowness and lack of predictability in this approach led to delays in remediation, "shopping" for the "best" remediation program, and confusion about what was expected. The Department responded to this situation by taking steps to bring consistency and efficiency to soil remediation regulations. In September 1994, the Department convened the Cleanup Standards/ Policy Task Force (Task Force), a collaborative effort of the business community, the interested public, and the regulators themselves. The Director asked the Task Force to address the issue of consistent remediation standards; specifically, to generate a range of ideas and proposals for the Department's remediation standards and policies. Although the Task Force was unable to provide consensus regarding remediation standards for groundwater and surface water, it provided the Director with an approach for soil. The provisions of A.R.S. §§ 49-151 and 49-152 are the result of these parties working together. The

Task Force presented a proposal to the Director in December 1994, and based on that recommendation, the Director decided on an approach which since has been placed in statute. There was compromise on the part of all parties in order to reach a "consent" solution. Building on the collaborative efforts of the Task Force, the Department promulgated the Interim Soil Remediation Standards Rule which has been effective since March 29, 1996. The Task Force has continued to meet, since that time. All meetings are open to the public. In addition to the Task Force meetings, the Department has arranged smaller "stakeholder meetings" to discuss and resolve specific technical issues regarding the Final Soil Rule that are then reported back to the larger Task Force members.

B. Statutory Objectives of the Enabling Legislation A.R.S. §§ 49-151 and 49-152

The subject matter of A.R.S. §§ 49-151 and 49-152 is establishing standards for remediation of contaminated soil. The statutes address responsible parties, operators or owners of property containing contaminated soil. They seek to reduce the risk of harm posed by the contaminated soil through setting soil remediation standards. There is no requirement in A.R.S. §§ 49-151 or 49-152 for a party to remediate; the duty to clean up is imposed by 1 of the existing A.R.S. Title 49 remediation programs. This rule describes the standards for the extent of the soil remediation. The question of "how clean is clean" is answered when the rule standards are met in a given remediation.

A.R.S. §§ 49-151 and 49-152 direct the Department to promulgate soil remediation rules that :

1. Set forth remediation standards that protect human health and the environment and are consistent with applicable environmental statutes and with A.R.S. § 33-434.01.
2. Establish pre-determined risk-based standards, including residential and non-residential exposure assumptions, and issue guidance on methods for calculating case-by-case, site-specific, risk-based remediation levels.
3. Require the owner of remediated property to provide notice, in the form of a Voluntary Environmental Mitigation Use Restriction (VEMUR) filed with the appropriate county recorder, if residential standards are not met. It provides for the cancellation of a VEMUR if the Director determines that the property has been remediated to residential use.
4. Establish a Departmental repository that lists sites remediated under programs administered by the Department under A.R.S. Title 49.

C. Summary of Interim Soil Remediation Standards Rule.

The obligation to remediate soil contamination is neither diminished nor expanded by the interim rule. As explained above, the duty to remediate is imposed by the various program requirements, and the interim rule, that is currently in effect, provides the standards that must be met in order to successfully complete that remediation. Some features of the interim rule include the following:

Applicability. There are 3 categories of persons who undertake remediation activities. The 1st category includes persons who have a legal duty to remediate under the Department's statutory authority (A.R.S. Title 49) and who are correcting contamination before any enforcement action is taken by the Department or the U.S. Environmental Protection Agency (USEPA). The requirement to remediate is found in the specific program statutes for the Water Quality Assurance Revolving Fund (WQARF) Program, the Underground Storage Tank (UST) Program, the Hazardous Waste Management Program, the Solid and Special Waste Management Program, and the Aquifer Protection Permit Program.

A 2nd category includes persons who are conducting remediation activities pursuant to an enforcement action issued by the Department under A.R.S. Title 49 or the USEPA. Enforcement actions include legal tools such as consent orders, compliance orders, and suits for civil penalties. Persons in the 2nd category have the same legal duty to remediate as those described above. The interim rule applies to persons in the 1st and 2nd categories.

The 3rd category consists of persons conducting remediation outside the Department's jurisdiction. The Department recognizes that it has no regulatory authority over a person who is either remediating a site which has not been so contaminated as to violate state law under A.R.S. Title 49, or who is not legally responsible for correcting the contamination under A.R.S. Title 49. A person in this category is the only 1 who can truly be said to be a "volunteer." As noted above, the interim rule does not create any new regulatory authority to require remediation and does not affect the actions of a true volunteer.

The Department is aware of many instances where a person who is not a responsible party wishes to conduct remediation in preparation for a change in property use or sale and requests a letter to facilitate that transaction. Even though there is no legal obligation to remediate, a person may request a letter from the Department stating that their property has met the soil remediation standards. In such cases, the requirements of this Article must be met. If a person is outside the Department's regulatory jurisdiction and no letter from the Department is requested, remediation may be conducted without the Department's involvement or knowledge.

Residential and Non-residential Standards. The interim rule provides flexibility for the remediating party to select a remediation standard that is protective of human health and the environment while also allowing the standard to be appropriate for the use of the property. For instance, industrial properties are no longer required to remediate to levels that would be protective of children living on the site if there is no potential that the property will be used for that purpose. However, if the current land use is residential or is zoned or planned to be re-zoned as residential, the property must be remediated to a level which is protective of residential use. A party conducting the remediation on a non-residential property can choose to remediate to the more protective residential standards or the less protective non-residential standards.

If a person chooses to remediate to non-residential levels, a Voluntary Environmental Mitigation Use Restriction (VEMUR) must be filed with the county recorder in the county where the property is located. The VEMUR provides notice that the property has not been cleaned to a level that would be protective of residential use and that the property owner agrees to limit the property to non-residential use. The VEMUR does not represent a defect in the title of the property, nor does it mean that the Department has taken an ownership interest in the property. The statute provides for approval and signature of a Department official on the VEMUR form. The Department signature verifies that the non-residential standards have been achieved at the property that is subject to the notice. The Department will need to evaluate a minimum amount of information in order to make this determination. Therefore, the party conducting the remediation must provide the required information to the applicable program for evaluation.

The choice of remediation standards facilitates property transfers by providing predictable and protective standards based on the probable future use of the property. When property transactions occur, the notification requirements provide buyers and lenders with the necessary information to make sound decisions.

Approaches For Determining the Soil Remediation Level. The interim rule provides flexibility for parties conducting soil remediations to select from 3 different approaches for determining the appropriate soil remediation levels. The 1st approach allows the use of pre-determined or "off the shelf" remediation standards. For the interim rule, the Department was mandated to adopt the Health-Based Guidance Levels (HBGLs) developed by the Arizona Department of Health Services (ADHS) as the pre-determined standards. HBGLs are based solely on exposure through ingestion and are based on the toxicological characteristics of each specific substance via this route. The HBGLs were calculated so that a 30-year ingestion exposure to soil results in a excess lifetime cancer risk below 1 in 1 million (expressed as 1×10^{-6}) and a Hazard Index of 1. HBGLs were developed for both residential and non-residential uses based on different exposure assumptions. Additionally, an HBGL was developed for Total Petroleum Hydrocarbons.

The 2nd approach allows for the use of site-specific remediation levels determined from a risk assessment. A risk assessment takes into consideration the present concentration of a contaminant, the health effects of the contaminant, and the potential for people to come into contact with the contaminant. Allowing the use of a risk assessment gives the remediating party the opportunity to develop alternative remediation levels which are specific to their site but are as protective of human health and the environment as the pre-determined remediation standards.

Under the interim rule, the remediation levels derived from a risk assessment for residential use are required to be at least as protective as an excess lifetime cancer risk of 1×10^{-6} and a hazard index no greater than 1 based on default residential exposure assumptions. The level of protectiveness must be met without the use of institutional or engineering controls. Recording the VEMUR is an example of an institutional control. An example of an engineering control is the creation of a physical barrier, such as an asphalt surface that prevents contact with the contamination. The remediation levels derived from a risk assessment for non-residential use must be more protective than an excess lifetime cancer risk of 1×10^{-4} and a hazard index no greater than 1 based on default non-residential exposure assumptions.

In order to use either of the approaches described above, several conditions must also be met. Any contaminants remaining after remediation cannot: 1) contaminate groundwater or surface water; 2) exhibit a hazardous waste characteristic of ignitability, corrosivity, or reactivity; or 3) cause a nuisance. With respect to groundwater, the Department has published guidance that is useful in demonstrating protection of groundwater quality. The guidance presents a methodology to determine if a soil remediation standard will adequately protect groundwater quality and, if not, how a soil remediation standard that is protective of groundwater can be developed.

The 3rd approach allows for a site to be remediated to the level of the contaminant naturally occurring in the soil. Where the background concentration is greater than the HBGL, a proper demonstration must be made to establish a background concentration for the inorganic contaminant of concern, and to justify the selection of the remediation concentration. The Department considers a proper demonstration 1 which uses a scientifically valid sampling procedure and statistical methods. Factors that may be used in establishing the background concentration for a site include results of soil sampling on or near the site, current and historical land use activities, migration potential, and chemical composition and bio-availability of the constituent of interest.

Initial Notice and Close-out Document. The interim rule requires a person who conducts a remediation pursuant to a regulatory program, as well as those not required to remediate but who wish to receive a letter from the Department stating that the property in question meets the remediation standards, to submit an Initial Notice informing the Department of the intent to remediate. The Initial Notice contains a description of the nature of the remediation project, remediation technologies, and a rationale for the selection of remediation levels. The Department will file the notice in the Departmental Repository, as well as provide notice to the appropriate city and county.

Because remediation activities can take considerable lengths of time to complete, concerns were expressed that the Repository must contain information about ongoing remediations in order to be of real value. Therefore, the rule requires parties to submit an Initial Notice prior to conducting a soil remediation to insure that accurate, timely information is entered into this database early in the process.

Additionally, the remediating party is required to submit a final report and, in return, the Department is required to evaluate the soil remediation performed and issue a Close-out Document indicating that the property met the soil remediation standard. Consistent with the initial notice, this requirement applies to those required to remediate as well as for those not required to remediate but who wish to receive a Close-out Document.

D. Summary of Differences between the interim rule and the Final Soil Remediation Standards.

The structure of the final rule is similar to the interim rule. It still provides flexibility for the remediating party to select a remediation standard based on residential or non-residential land use. The rule also allows a person to select 1 of 3 approaches for determining the soil remediation level.

Since the promulgation of the interim rule, the Department has continued to work with the Task Force on developing the final rule. In particular, several issues were not resolved during the development of the interim rule. These are presented below.

Applicability. As discussed previously, there are 3 categories of persons who undertake remediation activities. The interim rule applied to: 1) those who have a legal duty to remediate under A.R.S. Title 49, but who are conducting remediation prior to an enforcement action; 2) those who are conducting remediation pursuant to an enforcement action; and 3) those who are not required to remediate under A.R.S. Title 49, but who requested a Close-out Document. Recognizing the limits of the Department's authority, the final rule has been revised. The final rule still applies to the 1st 2 categories, but it no longer applies to the 3rd category unless they are conducting the remediation pursuant to an agreement under the WQARF Voluntary Remediation Program.

Because A.R.S. § 49-152 provides for the promulgation of soil remediation standards and does not address a voluntary program, the Department is excluding reference to voluntary remediations from the rule. It recognizes that anyone who remediates to the appropriate standards should be able to obtain a letter from the Department. The desire to encourage voluntary remediations was a fundamental concept of the Task Force. As such, the Department is pursuing legislation for authority to establish a voluntary remediation program and establish a funding mechanism.

In the meantime, the Department has established a program under WQARF authority, called the Voluntary Remediation Program (VRP), to assist the public and business community with the investigation and clean-up of contaminated or potentially contaminated property. In addition, the Department has developed a conceptual model to expand these services beyond that provided under WQARF in anticipation of legislative authority. The VRP Concept Paper can be obtained from the Department.

Residential and Non-residential Standards. The interim rule provides flexibility for the remediating party to select a remediation standard that is protective of human health and the environment while also allowing the standard to be appropriate for the use of the property. The party conducting the remediation can decide to remediate to the more protective residential standards or the less protective non-residential standards, depending on how they are going to use the property. However, if the current land use is residential, as defined by statute, the property must be remediated to the residential standards. In addition, if a person chooses to remediate to non-residential levels, a VEMUR must be filed with the county recorder in the county where the property is located.

The Department will be developing guidance to assist owners in understanding which property uses should be considered residential. This guidance, along with the notification information, will also provide buyers and lenders with the necessary information to make sound decisions.

Pre-Determined Standards. As discussed in the interim rule summary, the Department was mandated to adopt the HBGLs which only considered the ingestion pathway. Since that time, extensive discussion was held by the Task Force on the issue of the proper risk management level and the exposure pathway for the final pre-determined standards. However, no consensus was reached so the final decision was deferred to the Director. The Director considered various recommendations made by Task Force members and received input from members of the health care field and experts in related areas. Based on input received, the Director made the determination described as follows.

The proposed remediation levels, called the Soil Remediation Levels (SRLs), correspond to a fixed level of risk to human health posed by contaminated soil and include additional factors not considered in the present HBGLs. The proposed SRLs were calculated by the Arizona Department of Health Services largely using the Environmental Protection Agency's (EPA) Region 9 Preliminary Remediation Goals (PRG) guidance. The PRG guidance utilizes the most current EPA toxicological and risk assessment information and considers inhalation (breathing), ingestion (eating), and dermal (contact with skin) routes of exposure for contaminated soil. The risk-based levels combine current EPA toxicity values with standard exposure factors to estimate contaminant concentrations in soil that are protective of humans, including sensitive groups, over a lifetime. More information on the standard exposure factors can be found in the document entitled "Arizona Remediation Levels" prepared by ADHS. The Department deviated from the PRG guidance to develop alternative SRLs for several non-carcinogenic volatile chemicals based on a 1% nonaqueous-phase liquid (NAPL) concentration in soil pore spaces. This alternative approach is discussed in more detail in the Section titled "saturation."

Due to the more comprehensive method of calculating the SRLs, the Department is proposing to modify the acceptable excess lifetime cancer risk from exposure to contaminated soil. For known human carcinogens, the excess lifetime cancer risk level will remain at 1 in 1 million (expressed as 1×10^{-6}). For contaminants without proven human carcinogenic effects, the excess lifetime cancer risk level will be changed to 1 in 100,000 (1×10^{-5}). The Hazard Index for non-carcinogens must not exceed 1. SRLs are developed for both residential and non-residential uses based on different exposure criteria (i.e. length of time and amount of contact with contaminant). These protectiveness levels will also apply to the site-specific remediation standards to maintain consistency.

In order to use either the SRLs or a site-specific remediation level determined from a risk assessment, several conditions must also be met. Any contaminants remaining after remediation cannot: 1) contaminate the groundwater or surface water; 2)

exhibit a hazardous waste characteristic of ignitability, corrosivity or reactivity; or 3) cause a nuisance. In addition, another condition was added that specifies that any remaining contaminants may not cause an adverse impact to ecological receptors. This condition is described in more detail below.

Because toxicological information frequently changes as new methodologies and parameters are developed, the Department will examine the most recent information every 3 years and will update the SRLs accordingly. This will allow new contaminants to be added to the list and others adjusted or deleted as necessary.

Saturation. The SRLs for volatile compounds are developed from a model that assumes there is no free-phase contamination present in the soil. A calculation is performed that determines the contaminant concentration at which all the soil particle absorption sites reach their limit, the pore water is at the solubility limit, and the soil gas is saturated. Originally, the saturation limit represented a maximum concentration for the SRLs. For 20 compounds that are liquid at normal soil temperatures, the saturation limit is lower than the concentration of the contaminant in soil that would be protective of human health. This introduces a condition that prevents the SRLs from being truly risk-based remediation standards.

In recognition of the fact that the risk to human health at the saturation limit is much lower than the acceptable level of risk, the Department is proposing an alternative method. This alternative allows a maximum of 1% of the pore volume to be occupied by free-phase product. Laboratory studies indicate that, under the influence of gravity, movement of free-phase product from pore to pore does not occur significantly until 3 to 8% of the pore volume is occupied by free-phase. The maximum of 1% represents a level that will prevent movement from pore to pore because the free-phase product is immobilized by capillary forces. The calculated 1% pore volume concentration is compared with the concentration based on the systemic toxicity of the chemical. The listed SRL is the lower chemical concentration.

Risk Assessment Guidance. Risk assessment guidance is being developed to assist in the preparation of risk assessments, both deterministic and probabilistic. The deterministic guidance will include a methodology fashioned after American Society for Testing Material's (ASTM) Risk-Based Corrective Action Tier 2 for a fast, efficient risk assessment. Using default exposure assumptions, this risk assessment can be performed to exclude exposure pathways, modify soil characteristics, or adapt to site-specific conditions. This approach will provide flexibility for many parties wishing to develop site-specific standards, but reluctant to commit the time and resources to conduct a fully detailed risk assessment.

Depth Limits for SRLs. Some members of the Task Force expressed an interest in establishing a depth limit for the application of pre-determined standards. Several stakeholder meetings were held to discuss this issues, but no consensus could be reached.

Those in favor of a depth limit for pre-determined standards indicated that the possibility of exposure to contaminants from direct contact decreases as the depth of soil increases. This is especially true for dermal and ingestion routes of exposure. However, it is more difficult to assess the exposure at depth from indirect contact. The model used to calculate the inhalation pathway for the SRLs assumes that the contaminant source extends to the surface. The proponents of a depth limit point out that this assumption is overly conservative because clean soil will normally lie between the contamination and the ground surface and that the protection of groundwater (GPLs) will control the appropriate cleanup level at depth.

In contrast, those against a depth limit for pre-determined standards argue that the SRLs should account for the numerous conditions which occur on site. In addition, the opponents of a depth limit are concerned that there would not be appropriate notice to the property owner that contamination existed at depth. The only notice provisions which exist under the rule include the VEMUR and the repository. The VEMUR does not include depth information and the repository may not be consulted. The lack of notice may result in situations where the contaminated soil is excavated and contact with the contamination could occur. In addition, the owner may make land use decisions which are inconsistent with the remaining contamination, such as deep sub-basements.

The Department has proposed to set a depth limit for non-volatile contaminants at 4 meters (13 feet) below ground surface. This would require a person to remediate to the SRLs only to a depth of 4 meters below ground surface for non-volatiles (the GPLs still apply). Four meters was selected as the depth because swimming pools and basements represent common action where contact with the contaminated soil could occur if the excavated soil was used in landscaping. To provide notice, the Department has added depth of contamination information in the Initial Notice and in the minimum required information for obtaining a Letter of Completion so that this information can be collected for the Repository.

As a result of the divergent views on a depth limit for volatile contaminants, the Department has proposed 2 options in rule. The 1st option would require volatile contaminants to be remediated to the SRLs for the full lateral and vertical extent of the contamination. Under this option, a risk assessment would be required if a depth limit for volatiles is desired. As discussed above, the Department will be developing guidance to allow a person to conduct this limited risk assessment without having to do a full risk assessment to make this determination.

The 2nd option sets a depth limit for volatile contaminants at 6 meters (19 feet) below ground surface. As with non-volatile contaminants, a person would still have to demonstrate that groundwater would not be impacted. The 6 meter depth was selected based on comments received. The Department requests comments on these options and will evaluate any comments submitted to select 1, or a variation of 1 for adoption.

Ecological Risk. A.R.S. § 49-152(A) mandates the establishment of soil remediation standards which are protective of human health and the environment. In order to fulfill this mandate, the Department has added a condition that any remaining contaminants at a remediated site may not cause an adverse impact to ecological receptors. There are 3 criteria listed to determine impacts: 1) there must be an ecological receptor on a site of at least 1 acre; 2) the contaminant must be able to bioaccu-

mulate; and 3) there must be a pathway for the contaminant to reach the receptor. If a site meets these criteria, the impacts must be mitigated by means of further remediation or elimination of the exposure pathway or an ecological risk assessment can be conducted to evaluate the risk to the ecological receptors.

Due to the difficulty in defining ecological receptors and impacts to the receptors, the Department will develop guidance which can be applied on a site-by-site basis. This guidance will provide remediating parties with a method to determine if impacts to ecological receptors are anticipated. Specifically, the guidance will: 1) list the contaminants which bioaccumulate; 2) list the potential ecological receptors; and 3) list the transport mechanisms. In addition, guidance will be developed on how to conduct an ecological risk assessment.

Hydrocarbon SRL. Soils contaminated with petroleum products often contain hundreds of different hydrocarbons. Obstacles in developing risk-based SRLs for hydrocarbon mixtures include the variability in constituents at contaminated sites and the differing toxicity and carcinogenic potential among hydrocarbons. To reduce uncertainty and to insure that the SRLs are protective of human health, the SRLs for hydrocarbons have been calculated by assuming that hydrocarbon mixtures found at contaminated sites are similar in content to that of Diesel Fuel No. 2. This is a conservative assumption that is protective of human health since the process of weathering alters fuel hydrocarbon mixtures such that the chemicals remaining over time are less toxic than the original mixture. Additionally, if individual hydrocarbons with SRLs such as benzo(a)pyrene, exist in the hydrocarbon mixture at a site, the SRL for that constituent is the applicable cleanup standard.

Lifetime dermal studies for Diesel No. 2 analyzed and evaluated by Milner et. al. in *Human-Based Soil Cleanup Guidelines for Diesel Fuel No. 2* (Journal of Soil Contamination, 1992) were selected as the basis for deriving a cancer slope for hydrocarbons. The cancer slope factor used in developing hydrocarbon SRLs is the geometric mean of the 95% upper confidence limit of cancer potency factors derived from 21 toxicological studies of diesel fuel mixtures. Since there are no studies that have established diesel fuel as a human carcinogen, the SRL has been calculated using a target cancer risk of 1×10^{-5}. Exposure assumptions for calculating this SRL are identical to those used for non-volatile organic compounds. The SRLs listed in Appendix A are under "Hydrocarbons - C_9+". Since the cancer slope factor used to derive the SRLs is applicable to diesel range hydrocarbons, the SRL may be applied only to hydrocarbons without individual SRLs that contain 9 or more carbon atoms.

Cost effectiveness. Comments received during the interim rulemaking indicated a recommendation to include an evaluation of cost effectiveness and technical practicability in establishing remediation standards. Other comments received indicated that these factors should not impact the standards. The Department agrees that cost effectiveness is an important consideration and is appropriate for selecting the remedy or the options allowed under the rule. However, the establishment of remediation standards must be based on risk to human health and the environment as required by statute.

An evaluation of cost effectiveness is performed by the party conducting the remediation when they choose either the predetermined or site-specific approach. In addition, each option allows the choice of residential or non-residential use. A balance of the cost savings from remediation to a non-residential standard must be weighed against the potential impact of the requirement to file a VEMUR. Selection of the site-specific risk assessment approach may also provide an opportunity for cost savings. These remediation levels are developed for the particular site conditions rather than relying on the conservative default values used to develop the SRLs. The levels determined from a site-specific risk assessment may be less than the SRLs while still providing adequate protection of human health and the environment. Additionally, selection of the response action to attain the selected remediation standards provides opportunity for both cost effectiveness and technical practicability analyses.

Letter of Completion. Under the interim rule, the remediating party was required to submit a final report and in return, the Department was required to evaluate the soil remediation performed and issue a Close-out Document indicating that the property met the soil remediation standard. The concept of a determination letter is retained in the proposed final rule. However, the name is changed to Letter of Completion and the submission of a final report is no longer required unless the remediating party requests a Letter of Completion. The purpose of the name change is to clarify that the Letter of Completion addresses the adequacy of the soil remediation, it is not meant to "close out" a site from program requirements. This does not mean that the program cannot close out a site and issue a Letter of Completion at the same time. It simply means that program requirements are not contemplated in this rule.

E. Specific Section by Section Explanation of the Proposed Rulemaking

The Section-by-Section explanation of today's proposed rule is organized as follows:

R18-7-201. Definitions. Terms with specific application to today's rule are found in R18-7-201.

R18-7-202. Applicability. The Department has not deviated from its basic position that the rule applies to the 2 classes of people described in detail above. To summarize: the proposed rule applies to persons remediating soil subject to any of the 6 programs regulated by the Department. Those programs are: Water Quality Revolving Fund (WQARF) Program; Underground Storage Tank (UST) Program; Hazardous Waste Management Program; Solid and Special Waste Management Program; Aquifer Protection Permit Program; and any other program under A.R.S. Title 49 that regulates soil remediation. As described earlier, these persons include: 1) those who have a legal duty to remediate and who are correcting contamination prior to an enforcement action; 2) those who are conducting remediation activities pursuant to an enforcement action issued by the Department or the USEPA; 3) those who do not have a legal duty to remediate, but who are conducting the remediation pursuant to the WQARF Voluntary Program. As noted above, the proposed rule does not create any new regulatory authority to require remediation and does not affect the actions of those not already required by A.R.S. Title 49 to remediate. The Arti-

cle does not apply to soil remediations before the effective date of the proposed Article. Initiated means sites that have been fully characterized and a work plan has been developed which identifies the intended remedial measures.

R18-7-203. Remediation Standards. A person must remediate soils to the point that the concentration of each contaminant in the soil achieves the pre-determined standards (described in R18-7-204), or the site-specific remediation standards based on a background concentration or remediation levels derived from a site-specific risk assessment (described in R18-7-205). In addition to achieving the given remediation standards, at the completion of remediation, the remaining concentration of a contaminant cannot: 1) cause or threaten to cause contamination of groundwater; 2) cause or threaten to cause contamination of surface water; 3) exhibit a hazardous waste characteristic of ignitability, corrosivity, or reactivity; 4) cause a nuisance; and 5) cause or threaten to cause an adverse impact on ecological receptors.

R18-7-204. Pre-Determined Remediation Standards. Under the proposed rule, a person may elect to remediate to a pre-determined standard. A person remediating to a pre-determined remediation standard shall remediate to the residential SRL on any property where there is currently a residential use. The Department will review the SRLs every 3 years to determine if the levels reflect the most recent toxicological information for each contaminant and will update the SRLs accordingly.

R18-7-205. Site-Specific Remediation Standards. Under the proposed rule, a person may elect a site-specific approach choosing to remediate to either the background concentration for a naturally occurring contaminant, or to a remediation level determined from a human health risk assessment. If remediating to the background concentration of a contaminant, certain requirements must be met. A person choosing to utilize a site-specific risk assessment has the option of either a deterministic methodology, a probabilistic methodology, or an alternative methodology commonly accepted in the scientific community. Requirements associated with each methodology are listed. A person conducting a remediation based upon site-specific standards must remediate to a residential site-specific remediation level on any property where there is currently a residential use.

R18-7-206. Voluntary Environmental Mitigation Use Restriction (VEMUR). The purpose of the VEMUR is to inform future buyers that property is not suitable for residential uses. It indicates that, due to soil remediation levels achieved, the land owner agrees to restrict the property to non-residential uses. It does not represent a defect in the title of the property, nor does it mean that the Department has taken an ownership interest in the property.

Both the SRL and site-specific remediation levels provide for remediating to either residential or non-residential standards. Where remediation is not protective of residential use, the VEMUR is required, regardless of the remediation methodology chosen. A VEMUR must be recorded within 30 days after the applicable Departmental program's approval that the remediation is complete.

A VEMUR may be canceled when soil remediation conducted after recording a VEMUR achieves levels protective of residential use. A valid VEMUR and a cancellation document must be signed by both the property owner and the Department prior to filing. An example of a VEMUR is included in the proposed rule as Appendix B and the cancellation document is found in Appendix C.

R18-7-207. Initial Notice and Letter of Completion. A person who conducts a remediation must submit an Initial Notice informing the Department of the intent to remediate. The Initial Notice contains a description of the nature of the remediation project, remediation technologies, and a rationale for the selection of remediation levels. The Department will file the notice in the Departmental repository, as well as provide notice to the appropriate city and county.

Because remediation activities can take considerable lengths of time to complete, concerns were expressed that the Repository (described below) must contain information about ongoing remediations in order to be of real value. Therefore, the rule requires parties to submit an Initial Notice prior to conducting a soil remediation to insure that accurate, timely information is entered into this database early in the process. Additionally, many parties were adamant that the Department issue some form of verification that the soil remediation is complete. If requested, the individual Departmental programs will issue a Letter of Completion acknowledging that soil remediation standards have been met. However, the Department will need to evaluate a minimum amount of information in order to make this determination. Therefore, to receive a Letter of Completion, the party conducting the remediation must provide the required information to the applicable program. The Department relies on its authority under existing programs to require this information.

R18-7-208. Public Access to Information. A.R.S. § 49-152(D) requires the Department to establish a repository of sites that are remediated under Departmental programs. This requirement was provided in response to the public's concern that information about soil remediations be made available. The Repository takes the form of an electronic database available during Departmental working hours.

F. Analysis of A.R.S. § 41-1035: Reduction of rule impact on small businesses.

A.R.S. § 41-1035 requires the Department to reduce the impact of a proposed rule on the class of small businesses, if possible. The Department shall use 1 or more of the 5 methods defined in that Section to reduce the impact, if the methods are legal and feasible in meeting the statutory objectives which are the basis of the proposed rulemaking. The following analysis was performed on the 5 methods:

Compliance, reporting, scheduling, and deadline requirements. Methods 1, 2, and 3 in A.R.S. § 41-1035 require the Department to identify compliance, reporting, scheduling, and deadline requirements contained in a proposed rule and, when legal and feasible, to reduce, consolidate, or simplify them for applicants who fall within the class of small businesses. The proposed rule does not set schedules or deadlines for meeting compliance or reporting requirements. Compliance requirements in

the proposed rule stem from the establishment of risk-based standards. Reporting requirements are found in the (1) Initial Notice, (2) VEMUR or VEMUR cancellation, and (3) Letter of Completion. Each is discussed separately below.

Compliance: risk-based standards. The relevant statutory objectives require the Department to establish standards for soil remediation activities based on risk to human health and the environment. The statute also requires the Department to establish at least 2 categories of standards: residential and non-residential. The standards reflect the differing potential for occupants of land to be exposed to contaminated soil based on the use of land and not on the status or class of the entity performing the remediation. The Department also must allow these standards to be met by either of 2 methods: pre-determined (determined by rule, *or "off the shelf"*) and site-specific (determined by the entity performing the remediation *or "customized approach"*). The Department has determined that: (1) the proposed rule establishes standards and categories according to minimum statutory compliance requirements; these requirements apply to all entities performing remediation whether or not they fall within the class of small businesses, and (2) establishment of additional categories of standards would result in the recognition of other land use categories only.

Reporting: The Initial Notice. The proposed rule requires an Initial Notice be submitted to the Department if a person intends to conduct remediation activities in accordance with A.R.S. Title 49. The rule does not set a schedule or deadline for submission. The Initial Notice requirement is intended to provide information for the Department's Repository at an early stage of activity. Any submission deadlines will be set by the regulatory program, not this rule. The Department has determined that the information required in the Initial Notice is the minimum required by the relevant statutory objectives.

Reporting: The VEMUR or VEMUR cancellation. Not all entities governed by the proposed rule will be required to file a VEMUR or its cancellation. A VEMUR is only required when a land owner chooses to remediate to the less protective, non-residential standard instead of the more protective, residential standard. It is the land owner, not the Department, who makes this choice. The relevant statutory objectives require those who choose to remediate to the less protective standard to submit a minimum amount of information to obtain Department approval of the VEMUR. A land owner subsequently may request Department approval of a VEMUR cancellation when a property has been remediated to residential standards. The Department has determined that the proposed rule requires only the minimum amount of information required by the statutory objectives. Any change regarding information required for approval of the VEMUR or its cancellation could result in requiring more information than required by the proposed rule.

Reporting: The Letter of Completion. The relevant statutory objectives encourage remediation of contaminated land. Not all remediation programs, however, provide for Department acknowledgment of remediation activities. Sometimes, entities might not receive evidence from the Department of successful completion of remediation. The Department has determined that some sort of Departmental acknowledgment of completion furthers the statutory objectives which are the basis of the proposed rule and will encourage parties to remediate. To this end, the proposed rule allows anyone to request a Letter of Completion. The Department has determined that a minimum amount of information is necessary to allow the Department to make a reasoned decision whether or not to issue the letter. Reducing the level of required information could diminish the meaning and value of the resulting letter to an unacceptable level. The Department has determined that reducing or simplifying the reporting requirements for members of the class of small businesses could only cause the resulting Letter of Completion to fail in its essential purpose.

Performance versus design or operational standards. Method 4 in A.R.S. § 41-1035 requires the Department to identify design or operational standards contained in a proposed rule and, when legal and feasible, to replace them with performance standards for applicants who fall within the class of small businesses. Design or operational standards are standards that specify how each step in a process shall be done and may or may not also specify the desired end result. Performance standards are standards that only specify the desired end result but do not specify exactly how that end result is to be achieved. The relevant statutory objectives require the Department to establish performance standards only, not design or operational standards. With the establishment of SRLs, the Department has established performance standards only. The proposed rule leaves all other elements necessary to meet the performance standards to the person performing the remediation, subject only to certain statutory restrictions which have not been increased by this rule.

Rule exemption for small businesses. Method 5 in A.R.S. § 41-1035 requires the Department to exempt small businesses from all requirements of the proposed rule if legal and feasible. The Department has determined that the relevant statutory objectives require (1) the rule to apply to all entities performing remediation whether or not they are a small business and (2) remediation options available under the rule are based on land use and not whether the party performing remediation is a small business. The Department has set compliance, reporting, and performance requirements as low as permitted by statute for all parties performing soil remediation who are affected by the proposed rule. This means that small businesses could not be further exempted even if the Department had discretion to recognize them as a special class under the proposed rule.

Findings. At each step in the process, the Department exercised whatever discretion the Legislature delegated by statute to reduce adverse impacts on small businesses to the maximum extent permitted by the statutory objectives which are the basis of the proposed rule. The Department finds, therefore, that it is not legal or feasible to reduce further the impacts of the rule on small businesses which may be affected by the proposed rule.

5. **A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:**
   Not applicable.

6. **The preliminary summary of the economic, small business, and consumer impact:**
   A.R.S. § 41-1055(A)(1): Identification of the proposed rulemaking.

This rule provides alternative approaches for determining soil remediation standards for those parties already required to clean up soil contamination under existing Department regulatory programs. In effect, the rule answers the question "How clean is clean?" The soil remediation standards established in this rule define "clean" at levels protective of human health and the environment.

Prior to development of the soil remediation standards rule, remediation standards were developed in a patchwork fashion, often resulting in overlap, inconsistencies, and delays in remediation. This approach did not serve the regulated community or the Department well. Each remediation of soil required an investment of time and money by both the regulated community and the agency to negotiate an acceptable cleanup level. In addition, each Department program negotiated standards which resulted in different levels of "clean" for different programs. The varying standards led to confusion, or "shopping" for the "best" program, again resulting in delays in implementing remedial actions. Reductions of these transactional costs and quicker implementation of remedies are direct results of this rule.

The standards are risk-based and allow for options depending on whether the property is used for residential or non-residential purposes. Therefore, the remediations may be consistent with the use of the land. The proposed rule provides flexibility for the remediating party in selecting a remediation standard that is protective of human health and the environment while also allowing the standard to be appropriate for the use of the property. For instance, industrial properties are no longer required to remediate to levels that would be protective of children living on the site if there is no potential that the property will be used for that purpose. As a result, limited cleanup dollars, whether public or private funds, may be spent on those sites which pose a true risk to human health and the environment. The party conducting the remediation can decide to remediate to more protective standards at their discretion, not the agency's.

The rule provides parties conducting soil remediations with different approaches for determining appropriate soil remediation levels. The 1st approach allows the use of pre-determined remediation standards. These "off-the-shelf" standards, called Soil Remediation Levels (SRLs), were calculated by the Arizona Department of Health Services using models and assumptions which were developed by the U.S. Environmental Protection Agency and are widely accepted by the scientific community. These standards must be protective over a wide range of site characteristics and, therefore, conservative assumptions are built into the calculations. Alternatively, a party may choose to perform a site-specific risk assessment. This allows an opportunity to develop remediation standards based on the particular characteristics of a site. The resulting remediation standards may be less stringent than the SRLs, but still are protective of human health and the environment. A 3rd approach allows for a site to be remediated to the level of the contaminant naturally occurring in the soil.

Both the pre-determined and site-specific standards provide parties with the choice of remediation to either residential or non-residential standards. Remediation to residential standards is considered to be the most protective of human health. Therefore, remediation to this level does not require notification or limitations on the use of the property. If remediation to non-residential levels is selected, a Voluntary Environmental Mitigation Use Restriction (VEMUR) must be filed with the county recorder in the county where the property is located. The VEMUR provides notice that the property has not been cleaned to a level that would be protective of residential use and that the property owner agrees to limit the property to non-residential use. The statute provides for approval and signature of a Department official on the VEMUR form. The Department signature verifies that the non-residential standards have been achieved at the property subject to the notice. The choice of remediation standards should facilitate property transfers by providing predictable and protective standards based on the probable future use of the property. When property transactions occur, the notification requirements provide buyers and lenders with the necessary information to make sound decisions.

In addition to establishing remediation standards, the statute requires the Department to establish a repository of sites that are remediated under the Department's programs. This requirement was provided in response to the public's concern that information about all soil remediations be made available. Because remediation activities can take considerable lengths of time to complete, concerns were expressed that the database also must contain information about ongoing remediations in order to be of real value. Therefore, the rule requires parties to submit an Initial Notice prior to conducting a soil remediation to insure that accurate, timely information is entered into this database early in the process. Additionally, many parties were adamant that the Department issue some form of verification that the soil remediation is complete. The individual Department programs will issue a Letter of Completion acknowledging that soil remediation standards have been met. However, the Department will need to evaluate a minimum amount of information in order to make this determination. Therefore, to receive a Letter of Completion, the party conducting the remediation must provide the required information to the applicable program. The Department relies on its authority under existing programs to require this information.

A.R.S. § 41-1055(A)(2): Summary of the economic, small business and consumer impact statement

The probable benefits of the proposed soil remediation standards rule, which sets forth a consistent set of risk-based Department-wide cleanup standards, outweighs the probable costs for several reasons. When the proposed rule is measured against the bench mark of the previous ad hoc site-by-site negotiations (described above in the "Background of the Proposed Final Soil Remediation Rule"), several benefits and reduced costs emerge. The costs and benefits described in this summary are those which result primarily for the persons who must remediate. Other benefits and costs are described below.

Benefits.

Parties have the regulatory flexibility to make decisions about remediation which they determine are more economically feasible. The proposed rule sets forth options for responsible parties of contaminated sites to choose remediation approaches and generally speaking, remediation levels. A party can choose to remediate to a pre-determined standard ("off the shelf" approach) or remediate to levels derived from a risk assessment ("customized" approach) based on the party's determination of which option is the most economically feasible. These choices reduce the compliance costs by allowing a person to comply with the rule in a way that the party determines is less costly, or which results in the greater economic benefit.

As noted in the discussion of A.R.S. § 41-1055(A)(1) above, industrial properties are no longer required to remediate to levels that would be protective of children living on the site if there is no potential that the property will be used for that purpose: this decision is in the hands of the party conducting the remediation, not the agency's.

A related benefit is that a determination to remediate to a non-residential use carries with it the VEMUR, which provides notice that the remediation will be protective of human health at levels consistent with the use of the land. The Departmental signature on the VEMUR provides notice to all interested parties that the non-residential cleanup is sufficient for these non-residential uses. It has the effect of bringing otherwise non-productive properties back into productive use (and back on the tax rolls.)

Reduced transactional costs. Consistent, agency-wide standards reduce the transactional costs for regulated parties as well as the Department. As noted above, prior to the consistent standards, regulated parties and the Department often engaged in lengthy site-by-site negotiations. This ad hoc approach required significant outlays of time and money. From ADEQ's perspective, consistent Department-wide standards result in greater reliability and predictability of remediation outcomes. This greater reliability and predictability represents a more efficient use of Departmental resources.

Speedier implementation of remediation results in increased productive use of property. Consistent Department-wide standards mean that remediation can begin on a more timely basis. By reducing the transaction time involved, remediation can begin, and presumably be completed, in a shorter length of time. The result is that contaminated property is brought back to an economically productive use sooner. Owners, and lending institutions are able to recover monies spent on contaminated properties and accomplish property transfers in a more timely manner.

Risk-based remediations represent a more effective use of public and private resources. As explained in the "Overview of the Proposed Rule" above, the proposed rule is based on the idea of "risk-based remediation," which means that cleanup levels relate to risk to human health and the environment posed by contaminated soil. Risk-based remediation should result in greater cost effectiveness by better matching expenditures to the contamination sites posing the greatest amount of risk.

Risk-based remediation has the effect of creating a "bigger bang for the buck" in that dollars actually spent reduce a greater proportion of risk than remediations which are not risk-based. In addition, consistent standards ensure greater reliability in remediation outcomes.

The Letter of Completion increases property marketability. Prior to the interim rule, departmental programs did not have a consistent policy of issuing a "Close Out Document," which indicated that no further action was required. Even when a "Close Out Document" was issued, it had limited meaning as it simply attested to the fact that 1 program determined its standards were met. It offered no assurance that other Departmental standards had been met. Under the proposed rule, the Letter of Completion represents an increased benefit in that it carries assurance that Department-wide standards have been met. As such, the proposed Letter of Completion facilitates property transfers by providing pertinent information regarding the status of remediation.

Costs

Administrative costs may increase. There are 2 types of costs associated with the final rule. The 1st, the costs of complying with the rule (the reporting requirements), are discussed earlier in subsection E above ("Analysis of A.R.S. § 41-1035: Reduction of rule impact on small business"). The Initial Notice is required of all parties in order to maintain timely repository information regarding on-going remediations. The cost of complying consists of providing the Department with a description of the remediation project, the rationale for selection of remediation levels, and the description of the remediation technologies. The Initial Notice is the same regardless of whether the pre-determined standards or the levels derived from a site-specific risk assessment are chosen.

Another reporting requirement is the VEMUR. It is required only of parties who have chosen to remediate properties to non-residential use, and it consists of the filing fee required by the county recorder and the transactional cost of completing the form as prescribed in statute. Likewise, a person who filed a VEMUR but later chooses to file a VEMUR cancellation form (attesting that the property has been remediated to residential use standards), bears the filing fee and the transactional costs associated with completing the statutory form. A 3rd reporting requirement is the Letter of Completion. It is not required, it is an option that a party may request in order to verify that the soil remediation is complete. If the Letter of Completion is requested, a description of the actual remediation activities, technologies, and techniques is required, along with soil sampling results and documentation that rule requirements or conditions have been met.

Costs associated with complying with the reporting requirements stem from filling out required forms and more significantly, generating the information to include on the forms. These reporting costs are expected to be negligible in relation to the actual cost of the remediation.

Actual remediation costs will vary. A 2nd cost associated with the final rule is that of conducting the actual remediation. This cost differs according to the remediation approach (pre-determined standards or derived from site-specific conditions) selected by the responsible party, and is borne by that party. In addition to choosing the remediation approach, the responsible party also has the choice (within certain limits) of remediating to a level protective of residential use, or 1 protective of non-residential use. The more protective standard, and the more costly to achieve is residential. The Department expects that the responsible party will make decisions which it determines to be in its economic self-interest.

Performing a risk assessment may be less costly choice but includes the expense of hiring a risk assessment consultant. If a party believes that the pre-determined standards are overly stringent given site specific conditions, remediation levels derived from a risk assessment may be chosen. If a party chooses this approach, the additional cost of hiring a consultant to perform the Risk-based assessment must be borne. This cost of performing a risk assessment is in addition to the cost described above of conducting

the actual remediation, but this cost should be offset by savings realized from the reduced cost of the actual remediation. Again, as noted earlier, this choice is up to the remediating party, and the Department assumes the responsible party makes choices that maximize its economic self-interest.

Analysis of A.R.S. § 41-1055: Requirements of an EIS

(B)(2). Persons Directly Affected by the Rule

1. Parties required to conduct soil remediation on contaminated sites under Arizona law -- Responsible parties can be private citizens, businesses, state agencies or political subdivisions of the state. Examples of agencies who may be required to comply with the provisions of this rule include the State Land Department and the Arizona Department of Transportation if they are responsible parties under a A.R.S. Title 49 program. Remediation of state property may be performed by the Arizona Department of Administration Risk Management Division under certain circumstances. Political subdivisions, like cities, towns, counties and school districts, may be responsible parties and thus also required to comply with these rules.

2. State Agencies -- The Department of Environmental Quality (the Department) is the agency responsible for the implementation of these rules. The Department of Health Services (ADHS) developed the pre-determined standards for the rule. ADHS also provides consulting services on risk assessments under contract to the Department.

3. Political Subdivisions of the State -- Political subdivisions may be responsible parties required to comply with these rules. In addition, whenever soil contamination is remediated to non-residential standards, the property owner is required to file a Voluntary Environmental Mitigation Use Restriction (VEMUR) with the County Recorder's Office of the relevant jurisdiction.

4. Private Companies -- Private sector consulting companies and attorneys specializing in environmental remediation will be affected by this rule. Private companies that are responsible parties will be affected by this rule also.

5. Consumers and Taxpayers -- Consumers and taxpayers may be indirectly impacted by the rule. Any change in the cost of soil remediation resulting from changes in the final remediation standards may be passed along to consumers of products from companies already identified as responsible parties. Taxpayers ultimately pay for remediation of properties by the State or its political subdivisions; therefore, they may be indirectly impacted by any increase or decrease in cost of remediation to meet the final standards. Additionally, any efficiencies realized from reduced transactional costs, speedier remediations, and remediations focused on sites posing true risk to human health and the environment will indirectly affect taxpayers.

6. The General Public -- The establishment of consistent, risk-based soil remediation standards ensures protection of human health and the environment. The return of vacant properties to active use will improve community appearances and tax bases.

(B)(3). Cost-benefit Analysis

(B)(3)(a). Costs and Benefits to the Department, the Implementing Agency -- The departmental programs that will implement this rule are: the Underground Storage Tank (UST) Program; the Solid and Special Waste Management Program; the Special Waste Management Program; the Hazardous Waste Management Program; the Water Quality Assurance Revolving Fund (WQARF) Program; the Aquifer Protection Permit (APP) Program; and any other program under A.R.S. Title 49 that regulates soil remediation. The staff in these programs already oversee current remediation efforts in the State. No new program staff will be hired and no revenues are anticipated as a result of this rulemaking. There are costs to the Department associated with the rule including: maintenance of the repository, an anticipated increase in the risk-assessments (RAs) requiring more ADHS consulting services, and costs associated with rule development process. Only WQARF provides the Department with the ability to recover costs from responsible parties. Therefore, only those individual site costs that are eligible will be reimbursed to the Department. All other costs will be absorbed by the Department's budget.

Because the pre-determined Soil Remediation Levels (SRLs) and RAs are based on the best scientific evidence available to date, implementation of this rule will enable the Department to accomplish its mission of protecting public health and the environment more efficiently. The risk-based standards enable the Department to focus its efforts and those of the regulated community to target remediation of sites posing the greatest risk. Remediations should occur more quickly because of the reduced time required to negotiate cleanup standards prior to implementation. Consistent standards also assure that remediations performed under 1 departmental program will satisfy the goals of other departmental programs.

B(3)(a)(2). Costs and Benefits to Other State Agencies -- The Department has contracted with ADHS to conduct RAs for the Department and to review RAs submitted to departmental programs. No incremental costs and benefits to ADHS are anticipated. However, if more responsible parties choose the RA option, the Department's demand for ADHS services will increase. The Department expects that demand for legal services from the Arizona Attorney General's Office will decrease as a result of the reduced need to negotiate cleanup standards. State agencies that are responsible parties will incur the costs and benefits described in the summary of this EIS.

(B)(3)(b). Costs and Benefits to Political Subdivisions -- County recorder's offices throughout the State will record the VEMURs whenever the non-residential standards are selected. A nominal filing fee, determined by the County under its authority, is charged to the land owner. No new revenues or staff are anticipated as a result of the rule, however, revenues

may increase depending on the number of VEMURs filed. Municipalities and other political subdivisions of the State who are responsible parties will incur the costs and benefits described in the summary of this EIS.

(B)(3)(c). Costs and Benefits to Private Businesses -- Two types of businesses will be most impacted by this rule: 1) private business who are responsible parties; and 2) private business providing remediation services such as environmental consulting firms and attorneys. Private businesses who are responsible parties will incur the same cost and benefits described in the summary of this EIS.

The Department anticipates that more remediations will occur as a result of this rulemaking. The demand for consulting services may increase although the overall cost to remediate contaminated soil will change only as the standards have increased or decreased in stringency. The demand for consultants who provide risk assessment services is anticipated to increase. Conversely, it is anticipated that the demand for legal services formerly needed in negotiating cleanup standards will decrease. There may be a decrease in the demand for certain remedial technologies (e.g., a decrease in the need for landfill space, a decrease in transport, storage and disposal services). The new hydrocarbon standard (4100 mg/kg) is much less stringent than prior to rule development (100 mg/kg), therefore, reducing the demand for clean up of a number of sites and resulting in reduced need for related remedial services (e.g. soil burning).

The rule does not affect responsible party eligibility to receive reimbursement of remediation costs either from other responsible parties under WQARF or from the State Assurance Fund (SAF).

(B)(4). Impacts on Public and Private Employment

No incremental changes in public or private employment are foreseen as a result of this rule. If more sites move to remediation as a result of the rule, some consulting companies may hire more staff. The demand for people with risk assessment and/or toxicological expertise is expected to increase as a result of the rule option allowing the determination of site-specific standards from a risk assessment.

(B)(5). Impacts on Small Businesses

(B)(5)(a) Small Businesses Subject to the Rule -- Data from the latest economic census show that most of the business establishments in Arizona (98%) are small businesses to the extent that they have fewer than 100 employees. No data are available on whether these businesses have gross revenues of $4 million or less. No data or analysis are available either, on whether or not the regulated entities are "leaders" in their field or are independently owned and operated. Thus, the vast majority of business owners who are also responsible parties subject to this rule are presumed to be "small" by the criteria indicated in the statutory definition of small business.

(B)(5)(b) Administrative Costs to Small Businesses -- There are minimal administrative costs to any small business subject to this rule. There will be administrative costs associated with filing the Initial Notice, filing a request for the Letter of Completion and, if applicable, filing a VEMUR.

(B)(5)(c) Reduction of Cost Impact on Small Businesses -- A.R.S. § 41-1055(B)(5)(c) requires the Department to describe the methods it may use to reduce the cost impact of a proposed rule on small businesses. A description of methods used to simplify, consolidate, or exempt compliance, reporting, scheduling, and deadline requirements of the proposed rule for small businesses is discussed in the A.R.S. § 41-1035 rule impact reduction analysis elsewhere in this preamble. In that analysis, the Department finds that it is not legal or feasible, in accordance with the statutory objectives which are the basis of the proposed rule, to reduce further the impacts of the rule on small businesses. Costs imposed by a rule on members of the class flow from a rule's requirements. Here, the Department is proposing requirements in the rule that are no greater than those identified in the statutory objectives set by the Legislature. Individual small businesses, however, may experience differing costs when complying with the proposed rule. These differing costs will result from site specific remediation characteristics (e.g. type of contaminant, land use) rather than application of the rule. The Department has no authority to reduce rule requirements due solely to an entity's designation as a small business. The proposed rule allows all entities, including small businesses, to determine for themselves which standard and which method identified in the rule is the most cost effective to best meet their needs, given the site specific remediation characteristics.

(B)(5)(d) Costs and Benefits to Private Persons (Consumers) -- The costs of remediation borne by responsible parties will ultimately be passed on to their customers and consumers in general. This well-known economic fact results when business activities are subject to regulation. On the other hand, the potential benefits to consumers are evident. Site remediation carries many public health benefits to people who live and work on these sites. The health risks to exposed populations will diminish. The integrity of the environment will be maintained, and as such, the economic values of real properties, including those of adjacent property owners and homeowners, will be restored.

(B)(6). Probable Effects on State Revenues

This rule is anticipated to have no effects on state revenues. Most, if not all of the cash flows for remediation will occur between responsible parties (whether public or private) and remediation consulting companies. In the case of ADHS, revenue received for RA services will merely be reimbursements for costs incurred. No new net revenues are anticipated.

(B)(7). Less Intrusive or Less Costly Alternatives

The SRL standards, as calculated by ADHS, are based on sound scientific principles. Under the applicable statutory objectives discussed in the A.R.S. § 41-1035 analysis in this preamble and elsewhere, uniform standards must apply to all entities, whether they are public or private, small or large businesses. The question of costs revolves around contamination in site-spe-

cific cases, and what it costs to correct the contamination. The Department has provided alternatives for selection of remediation standards. This flexibility allows parties to choose the option that is most appropriate and cost effective for their individual purposes.

A.R.S. § 41-1055(C)

The Department requests economic data regarding remediation costs prior to the interim rule, and under the interim rule in order to test the qualitative assumptions described in this preliminary economic impact statement. Please submit this information to the person listed in item #7 below.

7. **The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:**

Name:	Mila Hill
Address:	Department of Environmental Quality 3033 North Central Ave. #844 Phoenix, Arizona 85012-2809
Telephone:	(602) 207-4435 or (800) 234-5677, ext. 4435 (AZ only)
Fax:	(602) 207-2251

8. **The time, place and nature of the proceedings for the adoption, amendment or repeal of the rule, or, if no proceeding is scheduled, where, when and how persons may request an oral proceeding on the proposed rule:**

Date:	March 31, 1997
Time:	1 p.m.
Location:	Flagstaff City Council Chambers 211 West Aspen Avenue Flagstaff, Arizona
Date:	April 2, 1997
Time:	1 p.m.
Location:	State Office Building 400 West Congress Room #222, South Building Tucson, Arizona
Date:	April 3, 1997
Time:	2 p.m.
Location:	ADEQ Public Meeting Room 3033 North Central Avenue Phoenix, Arizona

The close of comment period is April 4, 1997.

The ADEQ is committed to complying with the Americans with Disabilities Act. If any individual with a disability needs any type of accommodation, please call 602-207-4795 for special accommodations pursuant to the Americans with Disabilities Act. Persons interested in presenting verbal comments, submitting written comments, or obtaining more information on the proposed rules may do so at these meetings. The ADEQ will respond to all issues in the preamble accompanying the final rule.

9. **Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:**
Not applicable.

10. **Incorporation by reference and their location in the rules:**
Not applicable

11. **The full text of the rules follows:**

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 7. DEPARTMENT OF ENVIRONMENTAL QUALITY REMEDIAL ACTION

ARTICLE 1. WATER QUALITY ASSURANCE REVOLVING FUND

Section
R18-7-109. Remedial Action Requirements; Level and Extent of Cleanup

ARTICLE 2. INTERIM SOIL REMEDIATION STANDARDS

Section
~~R18-7-201.~~ ~~Definitions~~
R18-7-201. Definitions
~~R18-7-202.~~ ~~Applicability~~
R18-7-202. Applicability
~~R18-7-203.~~ ~~Remediation Standards~~
R18-7-203. Remediation Standards
~~R18-7-204.~~ ~~Background Concentration Levels~~
R18-7-204. Pre-determined Remediation Standards
~~R18-7-205.~~ ~~Health-Based Guidance Levels (HBGLs)~~
R18-7-205. Site-specific Remediation Standards
~~R18-7-206.~~ ~~Site-Specific Remediation Levels~~
R18-7-206. Voluntary Environmental Mitigation Use Restriction (VEMUR)
~~R18-7-207.~~ ~~Voluntary Environmental Mitigation Use Restriction (VEMUR)~~
R18-7-207. Initial Notice and Letter of Completion
~~R18-7-208.~~ ~~Initial Notice; Final Report; and Close-Out Document~~
R18-7-208. Public Access to Information
~~R18-7-209.~~ ~~Public Access to Information~~
~~Appendix A~~ ~~Human Health-Based Guidance Levels (HBGLs) For Ingestion of Contaminants In Soil~~
Appendix A. Arizona Soil Remediation Levels (SRLs)
~~Appendix B.~~ ~~Notice of Voluntary Environmental Mitigation Use Restriction by Owner(s)~~
Appendix B. Notice of Voluntary Environmental Mitigation Use Restriction by Owner(s)
~~Appendix C.~~ ~~Cancellation of Voluntary Environmental Mitigation Use Restriction by Owner(s)~~
Appendix C. Cancellation of Voluntary Environmental Mitigation Use Restriction by Owner(s)
~~Appendix D~~ ~~Sample Seller's Disclosure Language~~

ARTICLE 1. WATER QUALITY ASSURANCE REVOLVING FUND

R18-7-109. Remedial Action Requirements; Level and Extent of Cleanup

A. All remedial actions shall meet the following requirements:
1. Remedial actions shall be reasonable and necessary to prevent, minimize or mitigate danger to public health or welfare or to the environment from the release or threatened release of a hazardous substance.
2. Remedial actions shall provide for the control, management, or cleanup of a release or threatened release of a hazardous substance so as to allow the maximum beneficial use of the waters of the state. For remedial actions that may affect surface water, the evaluation of beneficial use must include the protection of surface water as required pursuant to A.A.C. R18-11-201 through R18-11-214 and R18-11-303. For remedial actions that may affect aquifers, the evaluation of beneficial use must include protection of drinking water pursuant to A.R.S. § 49-223, unless the aquifer or that part of the aquifer affected by the remedial action has been reclassified by the Director for a non-drinking water protected use pursuant to A.R.S. § 49-224(C).
3. Remedial actions shall be cost-effective over the period of actual or projected exposure to health or welfare or the environment from a release or threatened release of a hazardous substance. In evaluating cost-effectiveness, the Director shall take into account the total short-and long-term costs of the remedial action, including the costs of operation and maintenance.
4. Remedial actions shall be consistent with A.R.S. §§ 45-401 through 45-655, which includes all applicable and adopted Active Management Area Plans, Irrigation Non-expansion Area Plans, and all other applicable water management requirements, plans or permits.
5. Remedial actions shall be consistent with R18-7-201 through ~~R18-7-209~~ R18-7-208.

B. Subject to meeting remedial action requirements, and except for health risk assessments and health effects studies, the Director shall favor the selection of remedial actions that permanently and significantly reduce the volume, toxicity or mobility of a hazardous substance when it is practicable, cost-effective, and necessary to protect public health or welfare or the environment.

C. The Director shall require an expedited interim or permanent remedial action for cleanup when any of the following applies:
1. There is an actual or potential direct contact with a hazardous substance by a human or animal population.
2. There are drums, barrels, tanks or other bulk storage containers that pose a danger or threat of a danger to public health or welfare or the environment.
3. There are contaminated soils that pose a danger or threat of danger to public health or welfare or the environment.
4. There is a danger or threat of danger from fire or explosion.
5. There are weather conditions that cause the migration of the hazardous substance to accelerate and cause a threat to public health or welfare or the environment.

D. Subject to meeting remedial action requirements and considering remedial action criteria in establishing the level and extent of cleanup, the Director shall:
1. Require that remedial actions are appropriate under the circumstances presented by the release or threatened release of the hazardous substance. In determining what is appropriate, the Director shall consider the circumstances of the release or threatened release, the population at risk, the beneficial uses of waters of the state, the environmental media affected, and the most current scientific, medical and engineering information available.
2. Require that the remedial actions conform to the following statutes and rules, and any amendments thereto, when applicable:
   a. Surface Water Quality Standards adopted by the Department as A.A.C. R18-11-204 and R18-11-205.
   b. Groundwater Quality Standards adopted by the

Department as A.A.C. R9-21-403 and drinking water aquifer water quality standards adopted by A.R.S. § 49-223(A).

c. Hazardous waste corrective action rules adopted by the Department as A.A.C. R18-8-264(A) for those facilities required to obtain a hazardous waste permit pursuant to A.A.C. R18-8-270.

d. Corrective action requirements authorized under A.R.S. § 49-1005 pertaining to releases from underground tanks that contain regulated substances as defined by A.R.S. § 49-1001(8).

3. Require cleanup to a level sufficient to prevent or abate an imminent and substantial danger to public health or welfare or the environment where there are no standards established in law for a particular hazardous substance.

ARTICLE 2. INTERIM SOIL REMEDIATION STANDARDS

~~**R18-7-201. Definitions**~~

~~In addition to the definitions provided in A.R.S. §§ 49-151 and 49-152, the following definitions apply in this Article:~~

~~1. "Aquifer Protection Program" means the program described in A.R.S. Title 49, Chapter 2, Article 3 and 18 A.A.C. 9, Article 1.~~

~~2. "Background" means the concentration of a naturally occurring contaminant in like lithology and soils within close proximity to, but not affected by, a release.~~

~~3. "Carcinogen" or "carcinogenic" means a substance which has a cancer group designation of Class A, B1 or B2, but does not include a substance having cancer group designations C, D, E, or AND . The cancer group designation is found in Appendix A to the rule.~~

~~4. "Close-out Document" means a Departmental statement which indicates whether the property in question has met the standards set forth in this Article.~~

~~5. "Closing" means the point in a real property transaction when all contingencies are removed and the sale becomes final.~~

~~6. "Contaminant" means a substance which is known or suspected to have an adverse impact on human health or the environment when released, emitted, discharged or spilled into the environment.~~

~~7. "Department" means the Department of Environmental Quality.~~

~~8. "Deterministic risk assessment methodology" means a point-specific risk assessment. In the equation used to calculate risk, each parameter of exposure and toxicity is a single point estimate for each receptor evaluated (i.e. lifetime resident, adult resident, adult resident or young child resident). Upper-bound values are generally used in the risk calculation and the resulting risk estimate is likely to overstate the actual risk to any 1 individual.~~

~~9. "Groundwater" means the water in an aquifer as found in A.R.S. § 49-201(2).~~

~~10. "Hazardous Waste Disposal Program" means the program described in A.R.S. Title 49, Chapter 5, Article 2 and A.A.C. Title 18, Chapter 8, Article 2.~~

~~11. "Health-Based Guidance Levels" or "HBGLs" means the pre-determined risk-based standards developed by the Arizona Department of Health Services pursuant to A.R.S § 49-152(A)(1)(a) as found in Appendix A of the rule.~~

~~12. "Leachability" means the ability of a contaminant to move in the subsurface in such a manner that there is a reasonable probability that the contaminant will impact groundwater quality.~~

~~13. "Migrate" or "migration" means the movement of contaminants from the point of release, emission, discharge or spillage through the soil profile.~~

~~14. "Non-residential Exposure Assumption" means an average ingestion rate of 50 milligrams per day of soil, an exposure frequency of 250 days per year, and an exposure duration of 25 years.~~

~~15. "Nuisance" has the meaning found in A.R.S. § 49-141.~~

~~16. "Person" means 1 who is subject to the provisions of R18-7-202(A).~~

~~17. "Probabilistic risk assessment methodology" means substituting probability distributions for the point estimate input variable in the equations used to calculate exposure dose and risk. The resulting distribution provides a full characterization of risk and corresponding risk percentiles for all exposure levels.~~

~~18. "Registry" means the Departmental database of information from which the public may view voluntarily submitted notices, reports, applications; remedial reports pursuant to a Departmental enforcement action; and other public information related to proposed, pending or completed remediation projects.~~

~~19. "Residential Exposure Assumption" means an average ingestion rate of 120 milligrams per day of soil, an exposure frequency of 365 days per year, and an exposure duration of 30 years.~~

~~20. "Residential Protection" means an excess lifetime cancer risk level of 1×10^{-6} and a Hazard Index of no greater than 1 based on a standard residential exposure assumption without the use of institutional or engineering controls.~~

~~21. "Residential Use" has the meaning found in A.R.S. § 49-151(3).~~

~~22. "Remediate" or "remediation" has the meaning found in A.R.S. § 49-151(2).~~

~~23. "Risk assessment" is a scientific evaluation of the risk to human health from the exposure to a specific type and concentration of contaminant. A risk assessment contains 4 components: identification of potential chemicals of concern; an exposure assessment; a toxicity assessment; and a risk characterization.~~

~~24. "Seller's Disclosure" means, pursuant to A.R.S. § 33-434.01, a written notice from the owner of property to the purchaser of the property that the property has been subject to soil remediation pursuant to A.R.S. §§ 49-151 et. seq.~~

~~25. "Soil" means dirt or earthen material located between the surface of the land and groundwater.~~

~~26. "Solid Waste Management program" means the program described in A.R.S. Title 49, Chapter 4, Article 4 and the rules promulgated thereunder.~~

~~27. "Special Waste Management program" means the program described in A.R.S. Title 49, Chapter 4, Article 9 and A.A.C. Title 18, Chapter 8, Article 3.~~

~~28. "Voluntary environmental mitigation use restriction" or "VEMUR" means, pursuant to A.R.S. § 49-152(B), a written document, signed by the owner and the Department, and recorded on the chain of title for a particular parcel of real property which indicates that a remediation to less than residential standards has been completed and, unless subsequently canceled, that the property shall not be used for residential purposes in the future.~~

~~29. "Water Quality Assurance Revolving Fund" or "WQARF" means the program described in A.R.S. Title 49, Chapter 2, Article 5 and A.A.C. Title 18, Chapter 7, Article 1.~~

~~30. "Underground Storage Tank" or "UST" means the program described in A.R.S. Title 49, Chapter 6, Article 1 and A.A.C. Title 18, Chapter 12.~~

R18-7-201. Definitions

In addition to the definitions provided in A.R.S. §§ 49-151 and 49-152, the following definitions apply in this Article:

1. "Aquifer Protection Program" means the program described in A.R.S. Title 49, Chapter 2, Article 3 and 18 A.A.C. 9, Article 1.
2. "Background" means the 95th percentile upper-confidence limit of the distribution of the concentration of a naturally occurring contaminant in similar soils within close proximity to, but not affected by, a release.
3. "Cancer Group" means a chemical weight-of-evidence assessment by the United States Environmental Protection Agency to evaluate human carcinogenicity. Based on this evaluation, all chemicals have been placed in 1 of the following categories: A - known human carcinogen; B1 or B2 - probable human carcinogen; C - possible human carcinogen; D - Not classifiable as to human carcinogenicity; E - evidence of non-carcinogenicity in humans; and ND - evaluation not done.
4. "Carcinogen" or "carcinogenic" means a contaminant which has a cancer group designation of Class A, B1, B2, or C, but does not include a substance having cancer group designations D, E, or ND. The cancer group designation is found in Appendix A to the rule.
5. "Contact" means exposure through ingestion, inhalation, or dermal absorption.
6. "Contaminant" means a chemical which is known or suspected to have an adverse impact on human health or the environment when released, emitted, discharged or spilled into the environment.
7. "Department" means the Department of Environmental Quality.
8. "Deterministic risk assessment methodology" means a risk assessment which results in a point estimate of risk based on a specific set of input variables, exposure assumptions, and toxicity criteria represented by point estimates for each receptor evaluated.
9. "Ecological Receptor" means lands greater than 1 acre containing a population of plants and/or animals and associated habitat, or any individual member of any species listed as threatened or endangered, or the habitat of such listed species.
10. "Ecological Risk Assessment" is a scientific evaluation of the probability of an adverse effect to ecological receptors from the exposure to a specific type and concentration of a contaminant. A risk assessment contains 4 components: identification of potential contaminants; an exposure assessment; a toxicity assessment; and a risk characterization.
11. "Engineering Controls" means the remediation method used on site to prevent or minimize exposure to contaminants, including technologies that reduce the mobility or migration of contaminants.
12. "Groundwater" means the water in an aquifer as defined in A.R.S. § 49-201(2).
13. "Hazardous Waste Management Program" means the program described in A.R.S. Title 49, Chapter 5, Article 2 and 18 A.A.C. 8, Article 2.
14. "Human Health Risk Assessment" is a scientific evaluation of the probability of an adverse effect to human health from the exposure to a specific type and concentration of a contaminant. A risk assessment contains 4 components: identification of potential contaminants; an exposure assessment; a toxicity assessment; and a risk characterization.
15. "Institutional controls" means a legal or administrative tool or action taken to reduce the potential for exposure to contaminants.
16. "Letter of Completion" means a Departmental statement which indicates whether the property in question has met the soil remediation standards set forth in this Article.
17. "Migrate" or "migration" means the movement of contaminants from the point of release, emission, discharge or spillage through the soil profile as well as volatile emissions from soil to air and subsequent dispersion in air.
18. "Non-Residential Site-specific Remediation Level" means a level of contaminants in soil which will result in an excess lifetime cancer risk level between 1×10^{-4} and 1×10^{-6} and a Hazard Index of no greater than 1 based on non-residential exposure assumptions.
19. "Non-volatile" means a chemical that is not volatile as defined in R18-7-201(32).
20. "Nuisance" has the meaning found in A.R.S. § 49-141.
21. "Person" means any public or private corporation, company, partnership, firm, association or society of persons, the federal government and any of its departments or agencies, this state or any of its agencies, departments, political subdivisions, counties, towns, municipal corporations, as well as a natural person.
22. "Probabilistic risk assessment methodology" means a risk assessment which results in a range or distribution of possible risk estimates based on probability distributions of input variables and exposure assumptions which takes into account the variability and uncertainty of these values.
23. "Remediate" or "remediation" has the meaning found in A.R.S. § 49-151(2).
24. "Repository" means, pursuant to A.R.S § 49-152(D), the Departmental database of information from which the public may view information pertaining to proposed, pending or completed remediation projects.
25. "Residential Site-specific Remediation Level" means a level of contaminants in soil which will result in an excess lifetime cancer risk level of 1×10^{-6} for Class A carcinogens and an excess lifetime cancer risk level of 1×10^{-5} for Class B1, B2 or C carcinogens, and a Hazard Index of no greater than 1. This level must be attained without the use of institutional or engineering controls.
26. "Residential Use" has the meaning found in A.R.S. § 49-151(3).
27. "Soil" means unconsolidated earthen material located between the surface of the land and groundwater.
28. "Soil Remediation Levels" or "SRLs" means the predetermined risk-based standards developed by the Arizona Department of Health Services pursuant to A.R.S § 49-152(A)(1)(a) as found in Appendix A of the rule.
29. "Solid Waste Management program" means the program described in A.R.S. Title 49, Chapter 4, Article 4 and the rules promulgated thereunder.
30. "Special Waste Management program" means the program described in A.R.S. Title 49, Chapter 4, Article 9 and 18 A.A.C. 8, Article 3.
31. "Underground Storage Tank" or "UST" means the program described in A.R.S. Title 49, Chapter 6, Article 1 and 18 A.A.C. 12.
32. "Volatile" means a chemical that has a Henry's Law constant greater than 10^{-5} atm-m^3/mol, a molecular weight less than 200 g/mol, and a melting point less than 25°C.

33. "Voluntary environmental mitigation use restriction" or "VEMUR" means, pursuant to A.R.S. § 49-152(B), a written document, signed by the land owner and the Department, and recorded on the chain of title for a particular parcel of real property which indicates that a remediation to a level less protective than residential standards has been completed and, unless subsequently canceled, that the owner agrees to restrict the property non-residential uses.
34. "Water Quality Assurance Revolving Fund" or "WQARF" means the program described in A.R.S. Title 49, Chapter 2, Article 5 and 18 A.A.C. 7, Article 1.

~~R18-7-202. Applicability~~

~~A. This Article applies to a person legally required to conduct soil remediation activities under any of the following regulatory programs administered by the Department:~~
~~1. The Water Quality Assurance Revolving Fund (WQARF).~~
~~2. The Underground Storage Tank (UST) Program.~~
~~3. The Hazardous Waste Disposal Program.~~
~~4. The Solid Waste Management Program.~~
~~5. The Special Waste Management Program.~~
~~6. The Aquifer Protection Permit Program.~~
~~B. This Article also applies to a person not legally required to conduct remediation, but who chooses to do so and who requests a close-out document.~~
~~C. This Article applies in addition to any specific requirements of the programs described in Subsection (A).~~
~~D. The scope of this Article is limited to soil remediation activities.~~
~~E. This Article applies to remediation activities which are initiated on or after the effective date of this Article.~~

R18-7-202. Applicability

A. This Article applies to a person remediating soil subject to any of the following programs administered by the Department:
1. The Water Quality Assurance Revolving Fund (WQARF),
2. The Underground Storage Tank (UST) Program,
3. The Hazardous Waste Management Program,
4. The Solid Waste Management Program,
5. The Special Waste Management Program,
6. The Aquifer Protection Permit Program,
7. Any other program under this Title that regulates soil remediation.

B. The requirements of this Article apply in addition to any specific requirements of the programs described in subsection (A).

C. This Article is limited to soil remediation.

D. This Article does not apply to soil remediations that are initiated before the effective date of the Final Soil Remediation Rules under this Article. A soil remediation is considered initiated when the person conducting the remediation has characterized the lateral and vertical extent of contamination and has prepared a work plan identifying the intended remedial measures.

~~R18-7-203. Remediation Standards~~

~~When concluded, a soil remediation activity conducted by a person subject to this Article shall remediate soils to the point that the concentration of each contaminant in the soils achieves compliance with 1 of the following:~~
~~1. The background concentrations of the contaminant as described in R18-7-204.~~
~~2. The HBGLs set forth in Appendix A and the remediation processes described in R18-7-205.~~
~~3. The remediation levels derived from a site-specific risk assessment and the remediation processes described in R18-7-206.~~

R18-7-203. Remediation Standards

A. A person subject to this Article shall remediate soil to a concentration level such that each contaminant in the soil is less than or equal to 1 of the following:
1. The pre-determined standards described in R18-7-204.
2. One of the following site-specific remediation levels:
a. The background concentration of the contaminant as described in R18-7-205.
b. The remediation levels derived from a human health risk assessment as described in R18-7-205.

B. After remediation to a pre-determined standard or a level derived from a site-specific risk assessment, the remaining concentration for the contaminant in the soil shall not:
1. Cause or threaten to cause contamination of groundwater in excess of any numeric Aquifer Water Quality Standard at a program-specific point of compliance pursuant to R18-11-406, or if there is no numeric Aquifer Water Quality Standard, in excess of the narrative Aquifer Water Quality Standards pursuant to R18-11-405 at a program-specific point of compliance. If the remediation level for a contaminant in the soil is not protective of groundwater quality, a person shall remediate to an alternative soil remediation level. A scientifically valid demonstration shall be made to determine an alternative soil remediation level and shall include site-specific and contaminant-specific characteristics.
2. Cause or threaten to cause a violation of the Water Quality Standards pursuant to 18 A.A.C. 11, Article 1.
3. Exhibit the hazardous waste characteristic of ignitability, corrosivity or reactivity as defined in R18-8- 261(A).
4. Cause a nuisance.
5. Cause or threaten to cause an adverse impact to ecological receptors. If the remediation level for the contaminant is not protective of ecological receptors, a person shall remediate to an alternative standard based on an ecological risk assessment. The following factors shall be used in evaluating impacts to ecological receptors:
a. The contaminant's ability to bioaccumulate,
b. Demonstration of complete exposure pathways.

~~R18-7-204. Background Concentration Levels~~

~~A person may elect to remediate to the background concentration for a contaminant. If the background concentration is greater than the HBGL or greater than a site-specific remediation level determined pursuant to R18-7-206 and background will be used as the remediation level, a proper demonstration shall be made to establish a background concentration for the contaminant of concern, and to justify the selection of the remediation concentration. Laboratory analysis of samples shall be performed by a laboratory licensed by the Arizona Department of Health Services. The following factors may be used in establishing background:~~
~~1. Site-specific sampling of unaffected soils based on scientifically valid sampling procedures and statistical methods.~~
~~2. Site-specific historical information concerning land use.~~
~~3. Migration potential.~~
~~4. Chemical composition and bio-availability of the contaminant of interest.~~

[As discussed in the preamble to this rule, the Department is proposing 2 options regarding the depth below the ground surface to which a person would be required to remediate to achieve compliance with the SRLs. Only 1 option will be adopted by the Department after public comments are received.]

R18-7-204. Pre-determined Remediation Standards

A. A person may elect to remediate to the SRLs set forth in Appendix A.

B. The standards set forth in this Section are considered to have been achieved if the requirements of this Section, the conditions in R18-7-203(B), and the following conditions have been met:
   1. The non-volatile contaminants are remediated to levels below the SRLs to a depth of at least 4 meters below ground surface.
   2. The volatile contaminants are remediated to levels below the SRLs for the full vertical and lateral extent of the contamination.

C. A pre-determined standard established by federal law or regulation may be used for polychlorinated biphenyls (PCBs) regulated pursuant to the Toxic Substances Control Act (40 CFR 761).

D. A person conducting an SRL-based remediation shall remediate to the residential SRL on any property where there is currently a residential use.

E. A person choosing to remediate to the non-residential SRL shall comply with R18-7-206.

F. The Department will review the SRLs every 3 years to determine if the levels reflect the most recent toxicological information for each contaminant and will update the SRLs accordingly.

OR

R18-7-204. Pre-determined Remediation Standards

A. A person may elect to remediate to the SRLs set forth in Appendix A.

B. The standards set forth in this Section are considered to have been achieved if the requirements of this Section and the conditions in R18-7-203(B) have been met and:
   1. The non-volatile contaminants are remediated to levels below the SRLs to a depth of at least 4 meters below ground surface.
   2. The volatile contaminants are remediated to levels below the SRLs to a depth of at least 6 meters below ground surface.

C. A pre-determined standard established by federal law or regulation may be used for polychlorinated biphenyls (PCBs) regulated pursuant to the Toxic Substances Control Act (40 CFR 761).

D. A person conducting an SRL-based remediation shall remediate to the residential SRL on any property where there is currently a residential use.

E. A person choosing to remediate to the non-residential SRL shall comply with R18-7-206.

F. The Department will review the SRLs every 3 years to determine if the levels reflect the most recent toxicological information for each contaminant and will update the SRLs accordingly.

~~**R18-7-205. Health-based Guidance Levels**~~

~~A. A person may elect to remediate to the HBGLs set forth in Appendix A, or shall do so where required in an enforcement action duly issued or taken by the Department. HBGLs may be utilized if all of the following conditions are met:~~
   ~~1. The contaminant of concern has an HBGL listed in Appendix A.~~
   ~~2. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten contamination of the groundwater to exceed any Aquifer Water Quality Standard pursuant to R18-11-405 and R18-11-406 at a program specific point of compliance.~~
   ~~3. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten to cause a violation of the Water Quality Standards pursuant to 18 A.A.C. 11, Article 1.~~
   ~~4. At the conclusion of remediation, the remaining concentration for the contaminant of concern does not exhibit the hazardous waste characteristic of ignitability, corrosivity or reactivity as defined in R18-8-261(A).~~
   ~~5. At the conclusion of remediation, the remediation activity itself or the remaining concentration for the contaminant of concern does not cause a nuisance.~~
   ~~6. Federal law does not require the use of a site specific risk assessment.~~
   ~~7. Laboratory analysis of samples is performed by a laboratory licensed by the Arizona Department of Health Services under A.R.S. § 36-495 et. seq. and the rules promulgated thereunder.~~

~~B. Where the practical quantification limits (PQL) are greater than the residential HBGLs, and residential protection is desired or required, a risk assessment shall be conducted to determine the alternative remediation level.~~

~~C. A federal regulatory or statutory contaminant pre-determined standard may be used:~~
   ~~1. If no HBGL exists for a contaminant.~~
   ~~2. For polychlorinated biphenyls (PCBs) regulated pursuant to the Toxic Substances Control Act (40 CFR Part 761).~~

~~D. A person conducting an HBGL-based remediation shall remediate to the residential HBGL on any property which is described by 1 of the following:~~
   ~~1. Currently used for residential purposes.~~
   ~~2. Currently zoned as residential or subject to a pending application to be re-zoned as residential.~~
   ~~3. Currently designated as residential use on an approved master plan.~~

~~E. A person conducting an HBGL-based remediation project on non-residential property shall either:~~
   ~~1. Remediate to the residential HBGL.~~
   ~~2. Remediate to the non-residential HBGL and comply with all of the following:~~
      ~~a. Record, in accordance with R18-7-207, a VEMUR with the County Recorder in the county in which the property is located. The property shall not be used for residential purposes until the VEMUR is cancelled in accordance with R18-7-207.~~
      ~~b. Send to the Department, within 30 days of recording, a copy of the recording described in subparagraph (a).~~
      ~~c. Provide, prior to closing on the property, written notice to the purchaser in accordance with A.R.S. § 33-434.01.~~

~~F. If the HBGL for a contaminant of concern is not protective of groundwater quality, a person may elect to remediate to an alternative standard which will ensure that the contaminant will not exceed any Aquifer Water Quality Standard pursuant to A.A.C. R18-11-405 and R18-11-406 at a program specific point of compliance. A scientifically valid demonstration shall be made to evaluate the leachability potential and to establish an alternative remediation level. The scientifically valid demonstration shall include site-specific and contaminant-specific characteristics.~~

R18-7-205. Site-specific Remediation Standards

A. A person may elect to remediate to 1 of the following site-specific remediation standards:
   1. The background concentration for a contaminant.
   2. A remediation level determined from a human health risk assessment.

B. If a person chooses to remediate to a background concentration of a contaminant, a scientifically valid demonstration shall be made to establish the background concentration using the following factors:
   1. Site-specific sampling of unaffected soils based on scientifically valid sampling procedures and statistical methods,
   2. Site-specific historical information concerning land use,
   3. Migration potential,
   4. Chemical composition and bio-availability of the contaminant.

C. When conducting a site-specific risk assessment, a person shall use 1 of the following:
   1. A deterministic methodology. If a deterministic methodology is used, the default residential or non-residential assumptions for exposure frequency, body weight, exposure duration, and soil contact rates used in calculating the SRLs shall be used for future use scenarios.
   2. A probabilistic methodology. If a probabilistic methodology is used, it shall be no less protective than the 95th percentile upper-bound estimate of the distribution.
   3. An alternative methodology commonly accepted in the scientific community.

D. A person conducting a remediation based on the concentration levels determined from a site-specific risk assessment shall remediate to a residential site-specific remediation level on any property where there is currently a residential use.

E. A person choosing to remediate to a non-residential site-specific remediation level shall comply with R18-7-206. With the approval of the Department, a person may achieve the non-residential site-specific remediation level through the use of institutional and engineering controls.

~~**R18-7-206. Site-specific Remediation Levels**~~

~~A. A person may elect, or shall do so where required in an enforcement action duly issued or taken by the Department, to remediate to the concentration levels determined from a site-specific risk assessment if all of the following conditions are met:~~
   ~~1. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten contamination of the groundwater to exceed any Aquifer Water Quality Standard pursuant to R18-11-405 and R18-11-406 at a program-specific point of compliance.~~
   ~~2. At the conclusion of remediation, the remaining concentration for the contaminant of concern will not cause or threaten to cause a violation of the Water Quality Standards under 18 A.A.C. 11, Article 1.~~
   ~~3. At the conclusion of remediation, the remaining concentration for the contaminant of concern does not exhibit the hazardous waste characteristic of ignitability, corrosivity or reactivity as defined in R18-8-261(A).~~
   ~~4. At the conclusion of remediation, the remediation activity itself or the remaining concentration for the contaminant of concern does not cause a nuisance.~~
   ~~5. Laboratory analysis of samples is performed by a laboratory licensed by the Department of Health Services under A.R.S. § 36-495 et. seq. and the rules promulgated thereunder.~~

~~B. When conducting a site-specific risk assessment, a person shall use either a deterministic methodology, a probabilistic methodology or an alternative methodology commonly accepted in the scientific community. If a probabilistic methodology is used, it shall be no less protective than the 95th percentile upper bound estimate.~~

~~C. A person conducting a remediation based on the concentration levels determined from a site-specific risk assessment shall remediate to residential protection on any property which is described by 1 of the following:~~
   ~~1. Currently used for residential purposes.~~
   ~~2. Currently zoned as residential or subject to a pending application to be rezoned as residential.~~
   ~~3. Currently designated as residential use on an approved master plan.~~

~~D. A person conducting a remediation project based on the concentration levels determined from a site-specific risk assessment on non-residential property shall either:~~
   ~~1. Remediate to residential protection.~~
   ~~2. Remediate to a carcinogenic risk level more protective than 1×10^{-4}, but less protective than residential protection and comply with all of the following:~~
      ~~a. Record, in accordance with R18-7-207(A), a VEMUR with the County Recorder in the county in which the property is located. The property shall not be used for residential purposes until the VEMUR is cancelled in accordance with R18-7-207(B).~~
      ~~b. Send to the Department, within 30 days of recording, a copy of the recording described in subparagraph (a).~~
      ~~c. Provide, prior to closing on the property, written notice to the purchaser in accordance with A.R.S. § 33-434.01.~~

~~E. The Department may approve an alternative carcinogenic risk level greater than 1×10^{-4} and a non-cancer hazard index of greater than 1 if it is demonstrated that the site-specific conditions, potential pathways of exposure, and institutional and engineering controls are sufficient to protect human health and the environment. If such Departmental approval is given, property use shall be non-residential and subject to the requirements of paragraph (D)(2).~~

~~F. If the remediation level determined from a site-specific risk assessment is not protective of groundwater quality, a person may elect to remediate to an alternative standard which will ensure that groundwater quality will not exceed any Aquifer Water Quality Standard pursuant to R18-11-405 and R18-11-406 at a program-specific point of compliance. A scientifically valid demonstration shall be made to evaluate the leachability potential and to establish an alternative remediation level. The scientifically valid demonstration shall include site-specific and contaminant specific characteristics.~~

R18-7-206. Voluntary Environmental Mitigation Use Restriction (VEMUR)

A. A person who is required to record a VEMUR in accordance with A.R.S. § 49-152 shall record, with the County Recorder's office where the property is located, a copy of the document set forth in Appendix B. The VEMUR shall be recorded within 30 days after the applicable Departmental program's approval that the remediation is complete and shall be formatted in accordance with A.R.S. § 11-480 and any other specific requirements of the recorder of the jurisdiction. An authorized Departmental representative shall approve that non-residential levels have been achieved and shall sign the VEMUR before it is recorded.

B. A person who wishes to cancel a recorded VEMUR as described in A.R.S. § 49-152(F) shall record, with the County Recorder's office where the property is located, a copy of the

document set forth in Appendix C. An authorized Departmental representative shall approve that residential levels have been achieved and shall sign the VEMUR cancellation before it recorded.

C. Within 30 days of the date of recording, a person who records a document described in subsection (A) or (B) shall provide a copy of the recorded document to the Department.

~~R18-7-207. Voluntary Environmental Mitigation Use Restriction (VEMUR)~~

~~A. A person who is required to record a VEMUR in accordance with A.R.S. § 49-152 shall record, with the County Recorder's office where the property is located, a copy of the document set forth in Appendix B. The VEMUR shall be recorded within 30 days after completing remediation and shall be formatted in accordance with A.R.S. § 11-480 and any other specific requirements of the recorder of the jurisdiction. Remediation is considered complete when the analytical results of the samples taken to confirm the remediation level have been received by the person conducting the remediation. An authorized Departmental representative shall sign the VEMUR before it is recorded.~~

~~B. A person who wishes to cancel a recorded VEMUR as described in A.R.S. § 49-152(F) shall record, with the County Recorder's office where the property is located, a copy of the document set forth in Appendix C. An authorized Departmental representative shall sign the VEMUR cancellation before it recorded.~~

~~C. Within 30 days of the date of recording, a person who records a document described in subsection (A) or (B) shall provide a copy of the recording to the Department.~~

R18-7-207. Initial Notice and Letter of Completion

A. The requirements of this Section apply in addition to any specific requirements of the programs described in R18-7-202(A).

B. A person conducting a remediation shall submit in writing to the Department an Initial Notice of the intent to remediate which includes the following information:

1. The nature of the remediation project, including all of the following:
   a. Site location, including the legal description of the property,
   b. Each contaminant that will be remediated and the location and lateral and vertical extent of the contaminant(s),
   c. Current and post-remediation property use description as either residential or non-residential.
2. The rationale for selection of remediation levels.
3. The technologies to be used to remediate the site.

C. If a person requests a Letter of Completion, a person shall submit, at a minimum, the following information to the applicable Departmental program described in R18-7-202(A):

1. A description of the actual activities, techniques, and technologies used to remediate the site, including the maintenance of engineering controls.
2. Documentation that all demonstrations, factors, and conditions described in R18-7-203 have been satisfied.
3. Soil sampling results which are representative of the area which has been remediated including documentation that the laboratory analysis of samples has been performed by a laboratory licensed by the Department of Health Services under A.R.S. § 36-495 et. seq. and the rules promulgated thereunder.
4. A statement signed by the owner or a person authorized to act on behalf of the owner certifying the following:

   I certify under penalty of law that this document and all attachments are to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

D. The applicable Departmental program described in R18-7-202(A) shall evaluate the information submitted pursuant to subsection (C) to determine compliance with the soil remediation standards set forth under this Article and shall issue a Letter of Completion or request additional information.

E. The applicable Departmental program described in R18-7-202(A) may revoke or amend any Letter of Completion if the information submitted pursuant to subsection (C) is incomplete or inaccurate, or if any condition was unknown to the Department when the Department issued the Letter of Completion.

~~R18-7-208. Initial Notice; Final Report; and Close-Out Document~~

~~A. The requirements of this Section apply in addition to any specific requirements of the programs described in R18-7-202(A). If there is no requirement to remediate, a person who desires to receive a close-out document shall submit an initial notice and a final report.~~

~~B. A person conducting a remediation project based on pre-determined remediation standards or background concentrations shall submit in writing to the Department an initial notice of the intent to remediate which includes the following information:~~

~~1. The nature of the remediation project, including all of the following:~~
~~a. Site location, including the legal description of the property.~~
~~b. Site characteristics.~~
~~c. Current and post-remediation property use description as either residential or non-residential.~~
~~2. The rationale for selection of remediation levels.~~
~~3. The technologies to be used to remediate the site.~~

~~C. A person conducting a remediation project based on the concentration levels determined from a site-specific risk assessment shall submit in writing to the Department an initial notice of the intent to remediate and a request for risk assessment methodology approval. Departmental approval is required prior to beginning remediation. The initial notice and request for approval of the risk assessment methodology shall include all of the following information:~~

~~1. The site location, including the legal description of the property.~~
~~2. The site characteristics.~~
~~3. Current and post-remediation property use description as either residential or non-residential.~~
~~4. A description of the risk assessment methodology to be used.~~
~~5. The exposure pathway and individual exposure profile assumptions.~~

~~D. The Department shall take 1 of the following actions on a request for approval for risk assessment methodology:~~
~~1. Approve, deny, or request additional information necessary to make the determination within 45 days of receipt of the request.~~
~~2. Approve, deny, or request additional information necessary to make the determination within a timeframe specified in an existing Departmental regulatory program.~~
~~3. Approve or deny the request within 45 days of receipt of any additional information requested by the Department.~~

~~E. Within 90 days following completion of remediation activities at a site, or within a timeframe specified in an existing regulatory program administered by the Department, a person~~

~~described in subsection (B) or (C) shall submit to the Department a final report of the post-remediation site conditions. A final report shall be a pre-requisite for the Department's consideration of a close-out document. The report shall include all of the following information:~~

~~1. A description of the actual activities, techniques and technologies used to remediate the site, including the maintenance of engineering controls.~~

~~2. Consideration of all demonstrations, factors, and conditions described in R18-7-204, R18-7-205, and R18-7-206(A)(1) and all documentation supporting the report's conclusions.~~

~~3. Soil sampling results which are representative of the entire site.~~

~~4. Proof of compliance with local zoning requirements available from the county or city zoning boards.~~

~~5. A statement signed by the owner or a person authorized to act on behalf the owner certifying the following:~~

~~I certify under penalty of law that this document and all attachments are to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.~~

~~F. A final report submitted for non-residential remediation activities shall include the following information in addition to Subsection E:~~

~~1. A certification signed by the owner stating awareness of the requirements of A.R.S. §§ 33-434.01 and 49-152.~~

~~2. A copy of the VEMUR, as set forth in Appendix B, signed by the Department and recorded with the County Recorder's office.~~

~~G. Within 60 days after receiving a final report, the Department shall issue a close-out document, deny, or request additional information necessary to issue a close-out document.~~

~~H. The Department may require additional investigation including any necessary additional remediation, and may revoke, amend, or reaffirm any decision made under this Section if the information is incomplete or inaccurate, or if any condition was unknown to the Department when the Department entered into a decision under this Section.~~

R18-7-208. Public Access to Information

A. Pursuant to A.R.S. § 49-152(D), the Department shall establish and maintain an information repository for sites for which an initial notice of remediation has been filed. In addition, the repository shall contain a listing of those sites being remediated under programs administered by the Department or remediated pursuant to a Departmental enforcement action. Each entry in the repository shall contain all of the following:

1. The name and address of the property owner,
2. The dates the remediation was initiated and completed,
3. A legal description and street address of the property,
4. The remediation standard achieved,
5. Each contaminant that has been remediated, the location of the contaminants remediated, and the vertical extent of any residual contamination.

B. Material in the Repository shall be available for public review during the Department's normal business hours. A person who wishes to obtain copies of Repository materials may do so after paying an appropriate copying fee as established by the Department. In addition, the Department shall periodically provide a list of sites from the Repository to each local jurisdiction in which a site is located.

~~**R18-7-209. Public Access to Information**~~

~~A. Pursuant to A.R.S. § 49-152(D), the Department shall establish and maintain an information registry for sites for which an initial notice of remediation has been filed. In addition, the registry shall contain a listing of those sites being remediated under programs administered by the Department or remediated pursuant to a Departmental enforcement action. Each entry in the registry shall contain all of the following:~~

~~1. The name and address of the property owner.~~

~~2. The dates the remediation was initiated and completed.~~

~~3. A legal description and street address of the property.~~

~~4. An indication of whether residential protection has been achieved and whether the provisions of A.R.S. §§ 49-152(B) and 33-434.01 apply.~~

~~5. Each contaminant that has been remediated.~~

~~6. Such other information as is reasonably necessary to implement the statutory mandate.~~

~~B. Material in the Registry shall be available for public inspection during the Department's normal business hours. A person who wishes to obtain copies of Registry materials may do so after paying an appropriate copying fee as established by the Department. In addition, the Department shall periodically provide a list of sites from the Registry to each local jurisdiction in which a site is located.~~

~~**Appendix A. Human Health-based Guidance Levels (HBGLs) for Ingestion of Contaminants in Soil, June 1995 Update**~~

	~~CHEMICAL~~	~~CAS NUMBER~~	~~CANCER GROUP~~	~~SOIL INGESTION RESIDENTIAL ORAL HBGL (mg/kg)~~	~~SOIL INGESTION NON-RESID ORAL HBGL (mg/kg)~~
	~~**A**~~				
~~1.~~	~~Acenaphthene~~	~~83-32-9~~	~~ND~~	~~7000.0~~	~~24500.0~~
~~2.~~	~~»Acenaphthylene (PAH)~~	~~208-96-8~~	~~D~~	~~7000.0~~	~~24500.0~~
~~3.~~	~~»Acephate~~	~~30560-19-1~~	~~C~~	~~160.0~~	~~560.0~~
~~4.~~	~~Acetochlor~~	~~34256-82-1~~	~~NA~~	~~2300.0~~	~~8050.0~~
~~5.~~	~~»Acetone~~	~~67-64-1~~	~~D~~	~~12000.0~~	~~42000.0~~
~~6.~~	~~Acetonitrile~~	~~75-05-8~~	~~ND~~	~~700.0~~	~~2450.0~~
~~7.~~	~~Acetophenone~~	~~98-86-2~~	~~D~~	~~12000.0~~	~~42000.0~~
~~8.~~	~~Acifluorfen~~	~~62476-59-9~~	~~ND~~	~~1500.0~~	~~5250.0~~
~~9.~~	~~»Acrolein~~	~~107-02-8~~	~~C~~	~~2300.0~~	~~8050.0~~
~~10.~~	~~»Acrylamide~~	~~79-06-1~~	~~B2~~	~~0.3~~	~~1.3~~
~~11.~~	~~Acrylic acid~~	~~79-10-7~~	~~NA~~	~~58000.0~~	~~203000.0~~
~~12.~~	~~»Acrylonitrile~~	~~107-13-1~~	~~B1~~	~~2.5~~	~~10.5~~
~~13.~~	~~»Alachlor~~	~~15972-60-8~~	~~B2~~	~~17.0~~	~~71.0~~
~~14.~~	~~Alar~~	~~1596-84-5~~	~~NA~~	~~18000.0~~	~~63000.0~~
~~15.~~	~~»Aldicarb~~	~~116-06-3~~	~~D~~	~~120.0~~	~~420.0~~
~~16.~~	~~»Aldicarb sulfone~~	~~1646-88-4~~	~~D~~	~~120.0~~	~~420.0~~
~~17.~~	~~»Aldicarb sulfoxide~~	~~1646-87-3~~	~~D~~	~~150.0~~	~~525.0~~
~~18.~~	~~»Aldrin~~	~~309-00-2~~	~~B2~~	~~0.08~~	~~0.34~~
~~19.~~	~~Allyl alcohol~~	~~107-18-6~~	~~NA~~	~~580.0~~	~~2030.0~~
~~20.~~	~~Allyl chloride~~	~~107-05-1~~	~~C~~	~~5800.0~~	~~20300.0~~
~~21.~~	~~Aluminum phosphide~~	~~20859-73-8~~	~~NA~~	~~47.0~~	~~165.0~~
~~22.~~	~~Amdro~~	~~67485-29-4~~	~~ND~~	~~35.0~~	~~123.0~~
~~23.~~	~~»Ametryn~~	~~834-12-8~~	~~D~~	~~1100.0~~	~~3850.0~~
~~24.~~	~~Aminopyridine~~	~~504-24-5~~	~~D~~	~~2.3~~	~~8.0~~
~~25.~~	~~Amitraz~~	~~33089-61-1~~	~~ND~~	~~290.0~~	~~1015.0~~
~~26.~~	~~Ammonia (NH3)~~	~~7664-41-7~~	~~D~~	~~120000.0~~	~~420000.0~~
~~27.~~	~~»Ammonium sulfamate~~	~~7773-06-0~~	~~D~~	~~23000.0~~	~~80500.0~~
~~28.~~	~~Aniline~~	~~62-53-3~~	~~B2~~	~~240.0~~	~~1008.0~~
~~29.~~	~~»Anthracene (PAH)~~	~~120-12-7~~	~~D~~	~~35000.0~~	~~122500.0~~
~~30.~~	~~»Antimony (Sb)~~	~~7440-36-0~~	~~D~~	~~47.0~~	~~165.0~~
~~31.~~	~~Apollo~~	~~74115-24-5~~	~~C~~	~~150.0~~	~~525.0~~
~~32.~~	~~Aramite~~	~~140-57-8~~	~~B2~~	~~54.0~~	~~227.0~~
~~33.~~	~~»Arsenic, inorganic (As)~~	~~7440-38-2~~	~~A~~	~~0.91~~	~~3.82~~
~~34.~~	~~Assure~~	~~76578-14-8~~	~~D~~	~~1100.0~~	~~3850.0~~
~~35.~~	~~»Asulam~~	~~3337-71-1~~	~~D~~	~~5800.0~~	~~20300.0~~
~~36.~~	~~»Atrazine~~	~~1912-24-9~~	~~C~~	~~6.1~~	~~21.4~~
~~37.~~	~~Avermectin b1~~	~~65195-55-3~~	~~ND~~	~~47.0~~	~~165.0~~
~~38.~~	~~»Azinphos-methyl~~	~~86-50-0~~	~~E~~	~~290.0~~	~~1015.0~~
~~39.~~	~~Azobenzene~~	~~103-33-3~~	~~B2~~	~~12.0~~	~~50.0~~
	~~**B**~~				
~~40.~~	~~»Barium (Ba)~~	~~7440-39-3~~	~~D~~	~~8200.0 ##~~	~~28700.0 ##~~
~~41.~~	~~Barium cyanide~~	~~542-62-1~~	~~ND~~	~~12000.0~~	~~42000.0~~
~~42.~~	~~Baythroid~~	~~68359-37-5~~	~~ND~~	~~2900.0~~	~~10150.0~~
~~43.~~	~~Benefin~~	~~1861-40-1~~	~~NA~~	~~35000.0~~	~~122500.0~~
~~44.~~	~~»Benomyl~~	~~17804-35-2~~	~~D~~	~~5800.0~~	~~20300.0~~
~~45.~~	~~»Bentazon~~	~~25057-89-0~~	~~D~~	~~290.0~~	~~1015.0~~
~~46.~~	~~Benzaldehyde~~	~~100-52-7~~	~~NA~~	~~12000.0~~	~~42000.0~~
~~47.~~	~~»Benz[a]anthracene (PAH)~~	~~56-55-3~~	~~B2~~	~~1.1~~	~~4.6~~
~~48.~~	~~»Benzene (BNZ)~~	~~71-43-2~~	~~A~~	~~47.0~~	~~197.0~~
~~49.~~	~~»Benzidine~~	~~92-87-5~~	~~A~~	~~0.006~~	~~0.025~~
~~50.~~	~~»Benzo[a]pyrene (PAH) (BaP)~~	~~50-32-8~~	~~B2~~	~~0.19~~	~~0.80~~
~~51.~~	~~»Benzo[b]fluoranthene (PAH)~~	~~205-99-2~~	~~B2~~	~~1.1~~	~~4.6~~
~~52.~~	~~»Benzo[k]fluoranthene (PAH)~~	~~207-08-9~~	~~B2~~	~~1.1~~	~~4.6~~
~~53.~~	~~Benzoic acid~~	~~65-85-0~~	~~D~~	~~470000.0~~	~~1645000.0~~
~~54.~~	~~Benzotrichloride~~	~~98-07-7~~	~~B2~~	~~0.1~~	~~0.4~~
~~55.~~	~~»Benzyl alcohol~~	~~100-51-6~~	~~ND~~	~~35000.0~~	~~122500.0~~
~~56.~~	~~Benzyl chloride~~	~~100-44-7~~	~~B2~~	~~8.0~~	~~34.0~~
~~57.~~	~~»Beryllium (Be)~~	~~7440-41-7~~	~~B2~~	~~0.32~~	~~1.34~~

58.	Bidrin	141-66-2	NA	12.0		42.0
59.	Biphenthrin	2657-04-3	NA	1800.0		6300.0
60.	1,1-Biphenyl	92-52-4	D	5800.0		20300.0
61.	»bis(2-chloroethyl) ether (BCEE)	111-44-4	B2	1.2		5.0
62.	»Bis(2-chloroisopropyl) ether	39638-32-9	ND	19.0		67.0
63.	bis(chloromethyl) ether (BCME)	542-88-1	A	0.006		0.025
64.	Bisphenol A	80-05-7	NA	5800.0		20300.0
65.	»Boron and borates only (B)	7440-42-8	D	11000.0		38500.0
66.	»Bromacil	314-40-9	C	1500.0		5250.0
67.	»Bromodichloromethane (THM) (BDCM)	75-27-4	B2	22.0		92.0
68.	»Bromoform (THM) (BRFM)	75-25-2	B2	170.0		714.0
69.	»Bromomethane (BMM)	74-83-9	D	160.0		560.0
70.	»Bromoxynil	1689-84-5	D	2300.0		8050.0
71.	Bromoxynil octanoate	1689-99-2	NA	2300.0		8050.0
72.	N-butanol	71-36-3	D	12000.0		42000.0
73.	»Butyl benzyl phthalate	85-68-7	C	2300.0		8050.0
74.	»Butylate	2008-41-5	D	5800.0		20300.0
75.	Butylphthalyl butylglycolate	85-70-1	NA	120000.0		420000.0
	C					
76.	Cacodylic acid	75-60-5	D	350.0		1225.0
77.	»Cadmium (Cd)	7440-43-9	B1	58.0		244.0
78.	Calcium cyanide	592-01-8	ND	4700.0		16450.0
79.	Caprolactam	105-60-2	NA	58000.0		203000.0
80.	Captafol	2425-06-1	ND	160.0		560.0
81.	»Captan	133-06-2	D	390.0		1365.0
82.	»Carbaryl	63-25-2	D	12000.0		42000.0
83.	»Carbofuran	1563-66-2	E	580.0		2030.0
84.	»Carbon disulfide	75-15-0	D	12000.0		42000.0
85.	»Carbon tetrachloride (CCL4)	56-23-5	B2	10.0		42.0
86.	Carbosulfan	55285-14-8	ND	1200.0		4200.0
87.	»Carboxin	5234-68-4	D	12000.0		42000.0
88.	Chloral	75-87-6	NA	230.0		805.0
89.	»Chloramben	133-90-4	D	1800.0		6300.0
90.	»Chlordane	57-74-9	B2	1.0		4.0
91.	»Chlordimeform	6164-98-3	B2	1.2		5.0
92.	Chlorimuron-ethyl	90982-32-4	NA	2300.0		8050.0
93.	Chlorine cyanide	506-77-4	ND	5800.0		20300.0
94.	p-Chloroaniline	106-47-8	NA	470.0		1645.0
95.	»Chlorobenzene (monochlorobenzene) (MCB)	108-90-7	D	2300.0		8050.0
96.	Chlorobenzilate	510-15-6	B2	5.0		21.0
97.	1-Chlorobutane	109-69-3	D	47000.0		164500.0
98.	»Chloroform (THM) (CLFM)	67-66-3	B2	220.0		924.0
99.	»Chloromethane (CM)	74-87-3	C	100.0		350.0
100.	beta-Chloronaphthalene	91-58-7	NA	9400.0		32900.0
101.	»2-Chlorophenol	95-57-8	D	580.0		2030.0
102.	»Chlorothalonil	1897-45-6	B2	120.0		504.0
103.	»o-Chlorotoluene	95-49-8	D	2300.0		8050.0
104.	Chlorpropham	101-21-3	NA	23000.0		80500.0
105.	»Chlorpyrifos	2921-88-2	D	350.0		1225.0
106.	Chlorpyrifos-methyl	5598-13-0	NA	1200.0		4200.0
107.	»Chlorsulfuron	64902-72-3	D	5800.0		20300.0
108.	Chromium(III)	16065-83-1	NA	120000.0		420000.0
109.	Chromium(VI)	18540-29-9	A	580.0		2436.0
110.	Chromium(VI) (CrVI)	7440-47-3	A	580.0		2436.0
111.	»Chromium(Total) (Cr)	NA	D	1700.0 ##		5950.0 ##
112.	»Chrysene (PAH)	218-01-9	B2	110.0		462.0
113.	»Copper (Cu)	7440-50-8	D	4300.0 ##		15050.0 ##
114.	Copper cyanide	544-92-3	ND	580.0		2030.0
115.	»Cresols (total)	NA	D	5800.0		20300.0
116.	Crotonaldehyde	123-73-9	C	0.72		2.52
117.	Cumene	98-82-8	NA	4700.0		16450.0
118.	»Cyanazine	21725-46-2	D	1.6		5.6
119.	»Cyanide (Cn)	57-12-5	D	2300.0		8050.0
120.	Cyanogen	460-19-5	ND	4700.0		16450.0
121.	Cyanogen bromide	506-68-3	ND	11000.0		38500.0
122.	Cyclohexanone	108-94-1	NA	580000.0		2030000.0

123. Cyclohexylamine	108-91-8	NA	23000.0	80500.0
124. Cyhalothrin (Karate)	68085-85-8	ND	580.0	2030.0
125. Cypermethrin	52315-07-8	ND	1200.0	4200.0
126. »Cyromazine	66215-27-8	D	880.0	3080.0

D

127. »2,4-D (2,4-dichlorophenoxyace	94-75-7	D	1200.0	4200.0
128. »Dalapon	75-99-0	D	3500.0	12250.0
129. Danitol	39515-41-8	ND	2900.0	10150.0
130. »DCPA (dimethyl tetrachloroter	1861-32-1	D	1200.0	4200.0
131. »DDD (p,p'-dichlorodiphenyldic (DDD)	72-54-8	B2	5.7	23.9
132. »DDE (p,p'-dichlorodiphenyldic (DDE)	72-55-9	B2	4.0	17.0
133. »DDT (p,p'-dichlorodiphenyltri (DDT)	50-29-3	B2	4.0	17.0
134. »DDT/DDD/DDE (total) (DDT)	NA	B2	4.0	17.0
135. Decabromodiphenyl ether	1163-19-5	C	1200.0	4200.0
136. Demeton	8065-48-3	NA	4.7	16.5
137. 2,4-Diaminotoluene	95-80-7	NA	0.43	1.51
138. »Diazinon	333-41-5	E	110.0	385.0
139. »Dibenz[a,h]anthracene (PAH)	53-70-3	B2	0.11	0.46
140. 1,4-Dibromobenzene	106-37-6	NA	1200.0	4200.0
141. »Dibromochloromethane (THM) (DBCM)	124-48-1	C	16.0	56.0
142. »1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	B2	0.97	4.07
143. »Dibutyl phthalate	84-74-2	D	12000.0	42000.0
144. »Dicamba	918-00-9	D	3500.0	12250.0
145. »Dichlobenil	1194-65-6	D	58.0	203.0
146. »1,2-Dichlorobenzene (DCB2)	95-50-1	D	11000.0	38500.0
147. »1,3-Dichlorobenzene (DCB3)	541-73-1	D	10000.0	350.0
148. »1,4-Dichlorobenzene (DCB4)	106-46-7	C	57.0	200.0
149. »3,3'-dichlorobenzidine	91-94-1	B2	3.0	13.0
150. »Dichlorodifluoromethane (DCDFM)	75-71-8	D	23000.0	80500.0
151. 1,1-Dichloroethane (DCA)	75-34-3	C	1200.0	4200.0
152. »1,2-Dichloroethane (DCA2)	107-06-2	B2	15.0	63.0
153. »1,1-Dichloroethylene (DCE)	75-35-4	C	2.3	8.0
154. 1,2-Dichloroethylene (DCE2)	540-59-0	D	2300.0	8050.0
155. 1,2-Dichloroethylene (TOTAL)	NA	D	1200.0	4200.0
156. »cis-1,2-Dichloroethylene	156-59-2	D	1200.0	4200.0
157. »trans-1,2-Dichloroethylene	156-60-5	D	2300.0	8050.0
158. »Dichloromethane (DCM)	75-09-2	B2	180.0	756.0
159. 4-(2,4-Dichlorophenoxy)butyric acid	94-82-6	NA	940.0	3290.0
160. »2,4-Dichlorophenol	120-83-2	D	350.0	1225.0
161. »1,2-Dichloropropane (DCP2)	78-87-5	B2	20.0	84.0
162. 2,3-Dichloropropanol	616-23-9	ND	350.0	1225.0
163. »1,3-Dichloropropene	542-75-6	B2	7.6	31.9
164. Dichlorvos	62-73-7	B2	4.7	19.7
165. »Dicloran	99-30-9	E	2900.0	10150.0
166. »Dicofol	115-32-2	C	3.1 **	13.0**
167. »Dieldrin	60-57-1	B2	0.09	0.38
168. »Diethyl phthalate	84-66-2	D	94000.0	329000.0
169. »Di(2-ethylhexyl) adipate	103-23-1	C	1100.0	3850.0
170. »Di(2-ethylhexyl) Phthalate (DEHP)	117-81-7	B2	97.0	407.0
171. »Difenzoquat	43222-48-6	D	9400.0	32900.0
172. Diflubenzuron	35367-38-5	ND	2300.0	8050.0
173. »Diisopropyl Methylphosphonate (DIMP)	1445-75-6	D	9400.0	32900.0
174. Dimethipin	55290-64-7	C	230.0	805.0
175. »Dimethoate	60-51-5	D	23.0	81.0
176. Dimethyl phthalate	131-11-3	D	1200000.0	4200000.0
177. Dimethyl sulfate	77-78-1	B2	0.04	0.17
178. Dimethyl terephthalate	120-61-6	NA	12000.0	42000.0
179. N-N-Dimethylaniline	121-69-7	NA	230.0	805.0
180. 1,2-Dimethylbenzene (Xylene-o)	95-47-6	ND	230000.0	805000.0
181. 1,3-Dimethylbenzene (Xylene-m)	108-38-3	ND	230000.0	805000.0
182. 1,4-Dimethylbenzene (Xylene-p)	106-42-3	ND	230000.0	805000.0
183. 3,3-Dimethylbenzidine	119-93-7	NA	0.15	0.53
184. N,n-dimethylformamide	68-12-2	ND	12000.0	42000.0
185. 1,1-Dimethylhydrazine	57-14-7	NA	0.52	1.82
186. 2,4-Dimethylphenol	105-67-9	NA	2300.0	8050.0
187. 2,6-Dimethylphenol	576-26-1	ND	70.0	245.0

~~188.~~	~~3,4-Dimethylphenol~~	~~95-65-8~~	~~NA~~	~~120.0~~	~~420.0~~
~~189.~~	~~o-dinitrobenzene~~	~~528-29-0~~	~~D~~	~~47.0~~	~~165.0~~
~~190.~~	~~m-dinitrobenzene~~	~~99-65-0~~	~~D~~	~~12.0~~	~~42.0~~
~~191.~~	~~4,6-Dinitro-o-cyclohexyl phenol~~	~~131-89-5~~	~~NA~~	~~230.0~~	~~805.0~~
~~192.~~	~~»2,4-dinitrophenol~~	~~51-28-5~~	~~ND~~	~~230.0~~	~~805.0~~
~~193.~~	~~»2,4-dinitrotoluene~~	~~121-14-2~~	~~B2~~	~~2.0~~	~~8.0~~
~~194.~~	~~2,6-dinitrotoluene~~	~~606-20-2~~	~~ND~~	~~120.0~~	~~420.0~~
~~195.~~	~~»Dinoseb~~	~~88-85-7~~	~~D~~	~~120.0~~	~~420.0~~
~~196.~~	~~Dioctylphthalate~~	~~117-84-0~~	~~ND~~	~~2300.0~~	~~8050.0~~
~~197.~~	~~»1,4-dioxane~~	~~123-91-1~~	~~B2~~	~~120.0~~	~~504.0~~
~~198.~~	~~»Diphenamid~~	~~957-51-7~~	~~D~~	~~3500.0~~	~~12250.0~~
~~199.~~	~~Diphenylamine~~	~~122-39-4~~	~~NA~~	~~2900.0~~	~~10150.0~~
~~200.~~	~~»1,2-diphenylhydrazine~~	~~122-66-7~~	~~B2~~	~~1.7~~	~~7.1~~
~~201.~~	~~»Diquat dibromide~~	~~85-00-7~~	~~D~~	~~260.0~~	~~910.0~~
~~202.~~	~~Direct black 38~~	~~1937-37-7~~	~~NA~~	~~0.16~~	~~0.56~~
~~203.~~	~~Direct blue 6~~	~~2602-46-2~~	~~NA~~	~~0.17~~	~~0.60~~
~~204.~~	~~Direct brown 95~~	~~16071-86-6~~	~~NA~~	~~0.15~~	~~0.53~~
~~205.~~	~~»Disulfoton~~	~~298-04-4~~	~~E~~	~~4.7~~	~~16.5~~
~~206.~~	~~Dithiane~~	~~505-29-3~~	~~D~~	~~1200.0~~	~~4200.0~~
~~207.~~	~~»Diuron~~	~~330-54-1~~	~~D~~	~~230.0~~	~~805.0~~
~~208.~~	~~Dodine~~	~~2439-10-3~~	~~ND~~	~~470.0~~	~~1645.0~~
~~209.~~	~~»Dpx-m6316 (thifensulfuron met~~	~~79277-27-3~~	~~ND~~	~~1500.0~~	~~5250.0~~

~~E~~

~~210.~~	~~»Endosulfan~~	~~115-29-7~~	~~D~~	~~700.0~~	~~2450.0~~
~~211.~~	~~»Endosulfan i~~	~~959-988~~	~~D~~	~~5.8~~	~~20.3~~
~~212.~~	~~»Endothall~~	~~145-73-3~~	~~D~~	~~2300.0~~	~~8050.0~~
~~213.~~	~~»Endrin~~	~~72-20-8~~	~~D~~	~~35.0~~	~~123.0~~
~~214.~~	~~»Epichlorohydrin~~	~~106-89-8~~	~~B2~~	~~140.0~~	~~588.0~~
~~215.~~	~~»Ethephon~~	~~16672-87-0~~	~~D~~	~~580.0~~	~~2030.0~~
~~216.~~	~~»Epte (s-ethyl dipropylthiocar (EPTC)~~	~~759-94-4~~	~~D~~	~~2900.0~~	~~10150.0~~
~~217.~~	~~Ethion~~	~~563-12-2~~	~~ND~~	~~58.0~~	~~203.0~~
~~218.~~	~~2-Ethoxyethanol~~	~~110-80-5~~	~~NA~~	~~47000.0~~	~~164500.0~~
~~219.~~	~~Ethyl acetate~~	~~141-78-6~~	~~NA~~	~~110000.0~~	~~385000.0~~
~~220.~~	~~Ethyl acrylate~~	~~140-88-5~~	~~NA~~	~~28.0~~	~~98.0~~
~~221.~~	~~Ethyl ether~~	~~60-29-7~~	~~ND~~	~~23000.0~~	~~80500.0~~
~~222.~~	~~Ethyl methacrylate~~	~~97-63-2~~	~~NA~~	~~11000.0~~	~~38500.0~~
~~223.~~	~~Ethyl p-nitrophenyl phenylphosphorothioat~~	~~2104-64-5~~	~~NA~~	~~1.2~~	~~4.2~~
~~224.~~	~~»Ethylbenzene (ETB)~~	~~100-41-4~~	~~D~~	~~12000.0~~	~~42000.0~~
~~225.~~	~~Ethylene diamine~~	~~107-15-3~~	~~D~~	~~2300.0~~	~~8050.0~~
~~226.~~	~~»Ethylene dibromide (EDB)~~	~~106-93-4~~	~~B2~~	~~0.02~~	~~0.08~~
~~227.~~	~~»Ethylene glycol~~	~~107-21-1~~	~~D~~	~~230000.0~~	~~805000.0~~
~~228.~~	~~»Ethylene thiourea (ETU)~~	~~96-45-7~~	~~B2~~	~~12.0~~	~~50.0~~
~~229.~~	~~Ethylphthalyl ethylglycolate~~	~~84-72-0~~	~~NA~~	~~350000.0~~	~~1225000.0~~
~~230.~~	~~»N-ethyltoluene sulfonamide~~	~~26914-52-3~~	~~ND~~	~~290.0~~	~~1015.0~~
~~231.~~	~~Express~~	~~101200-48-0~~	~~NA~~	~~940.0~~	~~3290.0~~

~~F~~

~~232.~~	~~»Fenamiphos~~	~~22224-92-6~~	~~D~~	~~29.0~~	~~102.0~~
~~233.~~	~~»Fenarimol~~	~~60168-88-9~~	~~E~~	~~7600.0~~	~~26600.0~~
~~234.~~	~~»Fenvalerate~~	~~51630-58-1~~	~~ND~~	~~2900.0~~	~~10150.0~~
~~235.~~	~~»Fluometuron~~	~~2164-17-2~~	~~D~~	~~1500.0~~	~~5250.0~~
~~236.~~	~~»Fluoranthene (PAH)~~	~~206-44-0~~	~~D~~	~~4700.0~~	~~16450.0~~
~~237.~~	~~»Fluorene (PAH)~~	~~86-73-7~~	~~D~~	~~4700.0~~	~~16450.0~~
~~238.~~	~~»Fluoride (F)~~	~~7782-41-4~~	~~D~~	~~7000.0~~	~~24500.0~~
~~239.~~	~~»Fluridone~~	~~59756-60-4~~	~~D~~	~~9400.0~~	~~32900.0~~
~~240.~~	~~Flurprimidol~~	~~56425-91-3~~	~~ND~~	~~2300.0~~	~~8050.0~~
~~241.~~	~~Flutolanil~~	~~66332-96-5~~	~~ND~~	~~7000.0~~	~~24500.0~~
~~242.~~	~~»Fluvalinate~~	~~69409-94-5~~	~~D~~	~~1200.0~~	~~4200.0~~
~~243.~~	~~Folpet~~	~~133-07-3~~	~~B2~~	~~390.0~~	~~1638.0~~
~~244.~~	~~Fomesafen~~	~~72178-02-0~~	~~C~~	~~7.2~~	~~25.2~~
~~245.~~	~~»Fonofos~~	~~944-22-9~~	~~D~~	~~230.0~~	~~805.0~~
~~246.~~	~~Formaldehyde~~	~~50-00-0~~	~~B1~~	~~23000.0~~	~~96600.0~~
~~247.~~	~~»Formetanate hydrochloride~~	~~23422-53-9~~	~~E~~	~~180.0~~	~~630.0~~
~~248.~~	~~Formic acid~~	~~64-18-6~~	~~ND~~	~~230000.0~~	~~805000.0~~
~~249.~~	~~»Fosetyl-al~~	~~39148-24-8~~	~~C~~	~~35000.0~~	~~122500.0~~
~~250.~~	~~Furan~~	~~110-00-9~~	~~NA~~	~~120.0~~	~~420.0~~
~~251.~~	~~Furfural~~	~~98-01-1~~	~~NA~~	~~350.0~~	~~1225.0~~

252. Furmecyclox	60568-05-0	B2	45.0	189.0
G					
253. Glufosinate-ammonium	77182-82-2	NA	47.0	165.0
254. Glycidaldehyde	765-34-4	B2	47.0	197.0
255. »Glyphosate	1071-83-6	D	12000.0	42000.0
H					
256. Haloxyfop-methyl	69806-40-2	ND	5.8	20.3
257. »Heptachlor	76-44-8	B2	0.3	1.3
258. »Heptachlor epoxide	1024-57-3	B2	0.15	0.63
259. Hexabromobenzene	87-82-1	NA	230.0	805.0
260. »Hexachlorobenzene	118-74-1	B2	0.85	3.57
261. »Hexachlorobutadiene	87-68-3	C	17.0	60.0
262. »alpha-Hexachlorocyclohexane (alpha-HCH)	319-84-6	B2	0.22	0.92
263. »beta-Hexachlorocyclohexane (beta-HCH)	319-85-7	C	0.76 **	3.19 **
264. Technical-hexachlorocyclohexa	608-73-1	B2	0.76	3.19
265. »Hexachlorocyclopentadiene (HCCPD)	77-47-4	D	820.0	2870.0
266. Hexachlorodibenzo-p-dioxin, mixture	19408-74-3	B2	0.0002	0.0008
267. »Hexachloroethane	67-72-1	C	97.0	340.0
268. Hexachlorophene	70-30-4	NA	35.0	123.0
269. »n-hexane	110-54-3	D	7000.0	24500.0
270. »Hexazinone	51235-04-2	D	3900.0	13650.0
271. Hiobencarb	28249-77-6	ND	1200.0	4200.0
272. »HMX (octohydro-1,3,5,7-tetranitro-1,3,5,7-Tetrazocine)	2691-41-0	D	5800.0	20300.0
273. Hydrazine	302-01-2	B2	0.45	1.89
274. Hydrogen cyanide	74-90-8	ND	2300.0	8050.0
275. Hydrogen sulfide	7783-06-4	NA	350.0	1225.0
276. Hydroquinone	123-31-9	NA	4700.0	16450.0
I					
277. »Imazalil	35554-44-0	D	1500.0	5250.0
278. »Imazaquin	81335-37-7	D	29000.0	101500.0
279. »Indenopyrene (PAH)	193-39-5	B2	1.1	4.6
280. Iprodione	36734-19-7	ND	4700.0	16450.0
281. Isobutyl alcohol	78-83-1	NA	35000.0	122500.0
282. »Isophorone	78-59-1	C	1400.0	4900.0
283. Isopropalin	33820-53-0	ND	1800.0	6300.0
284. Isopropyl methyl phosphonic acid	1832-54-8	D	12000.0	42000.0
285. Isoxaben	82558-50-7	C	5800.0	20300.0
L					
286. Lactofen	77501-63-4	NA	230.0	805.0
287. »Lead and compounds (inorganic) (Pb)	7439-92-1	B2	400.0 ##	1400.0 ##
288. »Lindane (gamma-hexachlorocycl (gamma-HCH)	58-89-9	C	1.0	4.0
289. »Linuron	330-55-2	C	23.0	81.0
290. Londax	83055-99-6	NA	23000.0	80500.0
M					
291. »Malathion	121-75-5	D	2300.0	8050.0
292. Maleic anhydride	108-31-6	NA	12000.0	42000.0
293. »Maleic hydrazide	123-33-1	D	58000.0	203000.0
294. »Mancozeb	8018-01-7	ND	3500.0	12250.0
295. »Maneb	12427-38-2	D	580.0	2030.0
296. »Manganese (Mn)	7439-96-5	D	580.0	2030.0
297. »MCPA (2-methyl-4-chlorophenox (MCPA)	94-74-6	D	58.0	203.0
298. »Mepiquat chloride	24307-26-4	D	3500.0	12250.0
299. »Mercury (inorganic) (Hg)	7439-97-6	D	35.0	123.0
300. Merphos	150-50-5	NA	3.5	12.3
301. Merphos oxide	78-48-8	NA	3.5	12.3
302. »Metalaxyl	57837-19-1	D	7000.0	24500.0
303. Methacrylonitrile	126-98-7	NA	12.0	42.0
304. »Methamidophos	10265-92-6	D	5.8	20.3
305. Methanol	67-56-1	ND	58000.0	203000.0
306. Methidathion	950-37-8	C	120.0	420.0
307. »Methiocarb	2032-65-7	E	150.0	525.0
308. »Methomyl	16752-77-5	D	2900.0	10150.0
309. »Methoxychlor	72-43-5	D	580.0	2030.0
310. 2-Methoxyethanol	109-86-4	NA	120.0	420.0

311.	Methyl acetate	79-20-9	NA	120000.0	420000.0
312.	2-(2-Methyl-4-chlorophenoxy)propionic acid	93-65-2	NA	120.0	420.0
313.	4-(2-Methyl-4-chlorophenoxy) butyric acid	94-81-5	NA	1200.0	4200.0
314.	»Methyl ethyl ketone (MEK)	78-93-3	D	70000.0	245000.0
315.	Methyl isobutyl ketone	108-10-1	NA	9400.0	32900.0
316.	Methyl mercury	22967-92-6	C	12.0	42.0
317.	Methyl methacrylate	80-62-6	NA	9400.0	32900.0
318.	»Methyl parathion	298-00-0	D	29.0	102.0
319.	»Methyl tert-butyl ether (MTBE)	1634-04-4	D	580.0	2030.0
320.	4,4'-Methylene dianiline	101-77-9	NA	5.4	18.9
321.	4,4'-Methylene bis(N,N'-dimethyl)aniline	101-61-1	B2	30.0	126.0
322.	2-Methyllactonitrile	75-86-5	NA	8200.0	28700.0
323.	2-Methylphenol (o-Cresol)	95-48-7	C	580.0	2030.0
324.	3-Methylphenol (m-Cresol)	108-39-4	C	580.0	2030.0
325.	4-methylphenol	106-44-5	C	580.0	2030.0
326.	»Metolachlor	51218-45-2	C	1800.0	6300.0
327.	»Metribuzin	21087-64-9	D	2900.0	10150.0
328.	»Metsulfuron-methyl	74223-64-6	D	29000.0	101500.0
329.	Mirex	2385-85-5	ND	0.76	2.66
330.	Molinate	2212-67-1	ND	230.0	805.0
331.	»Molybdenum	7439-98-7	D	580.0	2030.0
332.	Monochloramine	10599-90-3	D	12000.0	42000.0
333.	»Monocrotophos	6923-22-4	E	5.3	18.6
334.	Monomethylhydrazine	60-34-4	NA	1.2	4.2
335.	»Monuron	150-68-5	ND	82.0	287.0
336.	»Msma (monosodium methanearson	2163-80-6	A	840.0 ##	3528.0 ##
337.	»Myclobutanil	88671-89-0	ND	2900.0	10150.0
	N				
338.	»Naled	300-76-5	D	230.0	805.0
339.	»Naphthalene (PAH)	91-20-3	D	4700.0	16450.0
340.	»Napropamide	15299-99-7	ND	12000.0	42000.0
341.	»Nickel, soluble salts (Ni)	7440-02-0	D	2300.0	8050.0
342.	»Nitrate (NO3)	14797-55-8	D	190000.0	665000.0
343.	»Nitrate/Nitrite (total)	NA	D	190000.0	665000.0
344.	Nitric oxide	10102-43-9	NA	12000.0	42000.0
345.	»Nitrite	14797-65-0	D	12000.0	42000.0
346.	2-Nitroaniline	88-74-4	NA	7.0	25.0
347.	»Nitrobenzene	98-95-3	D	58.0	203.0
348.	Nitrogen dioxide	10102-44-0	NA	120000.0	420000.0
349.	»Nitroguanidine	556-88-7	D	12000.0	42000.0
350.	N-Nitroso-di-n-butylamine	924-16-3	B2	0.25	1.05
351.	»n-Nitroso-di-n-propylamine	621-64-7	B2	0.19	0.80
352.	n-Nitroso-diethylamine	55-18-5	B2	0.009	0.038
353.	»n-Nitroso-dimethylamine	62-75-9	B2	0.03	0.13
354.	»n-Nitroso-diphenylamine	86-30-6	B2	280.0	1176.0
355.	N-Nitroso-N-ethylurea	759-73-9	B2	0.01	0.04
356.	N-Nitroso-N-methylethylamine	10595-95-6	B2	0.06	0.25
357.	N-Nitrosodiethanolamine	1116-54-7	B2	0.49	2.06
358.	»n-Nitrosopyrrolidine	930-55-2	B2	0.65	2.73
359.	»Norflurazon	27314-13-2	D	4700.0	16450.0
360.	NuStar	85509-19-9	NA	82.0	287.0
	O				
361.	Octabromodiphenyl ether	32536-52-0	D	350.0	1225.0
362.	Octamethylpyrophosphoramide	152-16-9	NA	230.0	805.0
363.	»Oryzalin	19044-88-3	C	580.0	2030.0
364.	Oxadiazon	19666-30-9	NA	580.0	2030.0
365.	»Oxamyl	23135-22-0	E	2900.0	10150.0
366.	»Oxydemeton-methyl	301-12-2	D	58.0	203.0
367.	Oxyfluorfen	42874-03-3	ND	350.0	1225.0
	P				
368.	Paclobutrazol	76738-62-0	NA	1500.0	5250.0
369.	»Paraquat	1910-42-5	C	53.0	186.0
370.	»Parathion	56-38-2	C	70.0	245.0
371.	»Pendimethalin	40487-42-1	D	4700.0	16450.0
372.	Pentabromodiphenyl ether	32534-81-9	D	230.0	805.0
373.	»Pentachlorobenzene	608-93-5	D	94.0	329.0

374.	~~Pentachloronitrobenzene~~	82-68-8	NA	5.2		18.2
375.	~~»Pentachlorophenol~~	87-86-5	B2	11.0		46.0
376.	~~»Permethrin~~	52645-53-1	D	5800.0		20300.0
377.	~~Phenmedipham~~	13684-63-4	NA	29000.0		101500.0
378.	~~»Phenol~~	108-95-2	D	70000.0		245000.0
379.	~~m-Phenylenediamine~~	108-45-2	NA	700.0		2450.0
380.	~~Phenylmercuric acetate~~	62-38-4	ND	9.4		32.9
381.	~~»Phorate~~	298-02-2	E	23.0		81.0
382.	~~»Phosmet~~	732-11-6	D	2300.0		8050.0
383.	~~»Phosphamidon~~	13171-21-6	D	20.0		70.0
384.	~~Phosphine~~	7803-51-2	D	35.0		123.0
385.	~~Phthalic anhydride~~	85-44-9	NA	230000.0		805000.0
386.	~~»Picloram~~	1918-02-1	D	8200.0		28700.0
387.	~~Pirimiphos-methyl~~	29232-93-7	ND	1200.0		4200.0
388.	~~»Polychlorinated biphenyls (PCBs)~~	1336-36-3	B2	0.18		0.76
389.	~~Polychlorinated biphenyl - ar~~	12674-11-2	ND	8.2		28.7
390.	~~Potassium cyanide~~	151-50-8	NA	5800.0		20300.0
391.	~~Potassium silver cyanide~~	506-61-6	ND	23000.0		80500.0
392.	~~Prochloraz~~	67747-09-5	C	9.1		31.9
393.	~~»Profenofos~~	41198-08-7	D	5.8		20.3
394.	~~»Profluralin~~	26399-36-0	ND	700.0		2450.0
395.	~~»Prometon~~	1610-18-0	D	1800.0		6300.0
396.	~~»Prometryn~~	7287-19-6	D	470.0		1645.0
397.	~~»Pronamide~~	23950-58-5	C	880.0		3080.0
398.	~~»Propachlor~~	1918-16-7	D	1500.0		5250.0
399.	~~Propanil~~	709-98-8	ND	580.0		2030.0
400.	~~»Propargite~~	2312-35-8	ND	2300.0		8050.0
401.	~~Propargyl alcohol~~	107-19-7	NA	230.0		805.0
402.	~~»Propazine~~	139-40-2	C	230.0		805.0
403.	~~»Propham~~	122-42-9	D	2300.0		8050.0
404.	~~»Propiconazole~~	60207-90-1	D	1500.0		5250.0
405.	~~»Propoxur~~	114-26-1	C	47.0		165.0
406.	~~Propylene glycol~~	57-55-6	ND	2300000.0		8050000.0
407.	~~Propylene glycol monoethyl ether~~	52125-53-8	ND	82000.0		287000.0
408.	~~Propylene glycol monomethyl ether~~	107-98-2	NA	82000.0		287000.0
409.	~~Propylene oxide~~	75-56-9	B2	5.7		23.9.0
410.	~~Pursuit~~	81335-77-5	NA	29000.0		101500.0
411.	~~»Pyrene (PAH)~~	129-00-0	D	3500.0		12250.0
412.	~~Pyridine~~	110-86-1	NA	120.0		420.0
	~~Q~~					
413.	~~Quinalphos~~	13593-03-8	NA	58.0		203.0
414.	~~Quinoline~~	91-22-5	NA	0.11		0.39
	~~R~~					
415.	~~»RDX (hexahydro-1,3,5-trinitro (RDX)~~	121-82-4	C	12.0		42.0
416.	~~Resmethrin~~	10453-86-8	NA	3500.0		12250.0
417.	~~Ronnel~~	299-84-3	NA	5800.0		20300.0
418.	~~Rotenone~~	83-79-4	NA	470.0		1645.0
	~~S~~					
419.	~~Savey~~	78587-05-0	NA	2900.0		10150.0
420.	~~Selenious acid~~	7783-00-8	D	580.0		2030.0
421.	~~»Selenium and compounds (Se)~~	7782-49-2	D	580.0 ##		2030.0 ##
422.	~~Selenourea~~	630-10-4	ND	580.0		2030.0
423.	~~»Sethoxydim~~	74051-80-2	D	11000.0		38500.0
424.	~~»Silver (Ag)~~	7440-22-4	D	580.0		2030.0
425.	~~Silver cyanide~~	506-64-9	ND	12000.0		42000.0
426.	~~»Simazine~~	122-34-9	C	11.0		39.0
427.	~~Sodium azide~~	26628-22-8	ND	470.0		1645.0
428.	~~Sodium cyanide~~	143-33-9	NA	4700.0		16450.0
429.	~~Sodium diethyldithiocarbamate~~	148-18-5	NA	5.0		18.0
430.	~~Sodium fluoroacetate~~	62-74-8	ND	2.3		8.0
431.	~~»Strontium~~	7440-24-6	D	70000.0		245000.0
432.	~~Strychnine~~	57-24-9	ND	35.0		123.0
433.	~~»Styrene~~	100-42-5	C	2300.0		8050.0
434.	~~»Sulfate (SO4)~~	14808-79-8	D	6700000.0 ##		23450000.0 ##
435.	~~»Sulprofos~~	35400-43-2	E	290.0		1015.0

T

436.	»2,3,7,8-TCDD (TCDD)	1746-01-6	B2	0.000009		0.000038
437.	»Tebuthiuron	34014-18-1	D	8200.0		28700.0
438.	»Terbacil	5902-51-2	E	1500.0		5250.0
439.	»Terbufos	13071-79-9	D	2.9		10.2
440.	»Terbutryn	886-50-0	ND	120.0		420.0
441.	»1,2,4,5-Tetrachlorobenzene	95-94-3	D	35.0		123.0
442.	»1,1,1,2-Tetrachloroethane	630-20-6	C	52.0		182.0
443.	»1,1,2,2-Tetrachloroethane (TET)	79-34-5	C	6.8 **		28.6 **
444.	»Tetrachloroethylene (PCE)	127-18-4	B2	27.0		113.0
445.	2,3,4,6-tetrachlorophenol	58-90-2	ND	3500.0		12250.0
446.	Tetrachlorovinphos	961-11-5	NA	57.0		200.0
447.	»Tetraethyl lead	78-00-2	D	0.01		0.04
448.	Tetraethyldithiopyrophosphate	3689-24-5	ND	58.0		203.0
449.	Thallic oxide	1314-32-5	D	8.2		28.7
450.	»Thallium (Tl)	7440-28-0	ND	8.2		28.7
451.	Thallium acetate	563-68-8	D	11.0		39.0
452.	Thallium carbonate	6533-73-9	D	9.4		32.9
453.	Thallium chloride	7791-12-0	D	9.4		32.9
454.	Thallium nitrate	10102-45-1	D	11.0		39.0
455.	Thallium selenite	12039-52-0	D	11.0		39.0
456.	Thallium sulfate	7446-18-6	D	9.4		32.9
457.	Thiofanox	39196-18-4	NA	35.0		123.0
458.	»Thiophanate-methyl	23564-05-8	D	9400.0		32900.0
459.	Thiophenol	108-98-5	NA	1.2		4.2
460.	»Thiram	137-26-8	D	580.0		2030.0
461.	Tin (Sn)	NA	ND	70000.0		245000.0
462.	»Toluene (TOL)	108-88-3	D	23000.0		80500.0
463.	Total petroleum hydrocarbons (TPH)	NA	ND	7000.0 su		24500.0 su
464.	»Toxaphene	8001-35-2	B2	1.2		5.0
465.	Tralomethrin	66841-25-6	ND	880.0		3080.0
466.	»Triadimefon	43121-43-3	D	3500.0		12250.0
467.	Triallate	2303-17-5	ND	1500.0		5250.0
468.	Triasulfuron	82097-50-5	NA	1200.0		4200.0
469.	1,2,4-Tribromobenzene	615-54-3	ND	580.0		2030.0
470.	Tributyltin oxide	56-35-9	ND	3.5		12.3
471.	»Trichlorfon	52-68-6	C	150.0		525.0
472.	»1,2,4-Trichlorobenzene	120-82-1	D	1200.0		4200.0
473.	»1,1,1-Trichloroethane (TCA)	71-55-6	D	11000.0		38500.0
474.	»1,1,2-Trichloroethane (TCA2)	79-00-5	C	24.0		84.0
475.	»Trichloroethylene (TCE)	79-01-6	B2	120.0		504.0
476.	»Trichlorofluoromethane (TCFM)	75-69-4	D	35000.0		122500.0
477.	»2,4,5-Trichlorophenol	95-95-4	D	12000.0		42000.0
478.	»2,4,6-Trichlorophenol	88-06-2	B2	120.0		504.0
479.	»2,4,5-T (2,4,5-trichloropheno	93-76-5	D	1200.0		4200.0
480.	»2,4,5-TP (2 (2,4,5-TrichloroPhenoxy) Propionic acid)	93-72-1	D	940.0		3290.0
481.	1,1,2-Trichloropropane	598-77-6	ND	580.0		2030.0
482.	»1,2,3-Trichloropropane	96-18-4	D	0.19		0.67
483.	»Trichlorotrifluoroethane (F113)	76-13-1	D	3500000.0		12250000.0
484.	»Triclopyr	55335-06-3	E	290.0		1015.0
485.	Tridiphane	58138-08-2	ND	350.0		1225.0
486.	»Trifluralin	1582-09-8	C	180.0		630.0
487.	»Triforine	26644-46-2	D	2900.0		10150.0
488.	1,3,5-Trinitrobenzene	99-35-4	NA	5.8		20.3
489.	»2,4,6-Trinitrotoluene (TNT)	118-96-7	C	45.0		158.0

U

490.	»Uranium (U)	7440-61-1	A	350.0 xx		1225.0 xx

V

491.	»Vanadium (V)	7440-62-2	D	820.0		2870.0
492.	Vanadium pentoxide	1314-62-1	NA	1100.0		3850.0
493.	»Vernolate	1929-77-7	ND	120.0		420.0
494.	»Vinclozolin	50471-44-8	D	2900.0		10150.0
495.	Vinyl acetate	108-05-4	NA	120000.0		420000.0
496.	»Vinyl chloride (VC)	75-01-4	A	0.72		3.02

	~~W~~				
~~497.~~	~~Warfarin~~	~~81-81-2~~	~~NA~~	~~35.0~~	~~123.0~~
~~498.~~	~~White phosphorus~~	~~7723-14-0~~	~~D~~	~~2.3~~	~~8.0~~
	~~X~~				
~~499.~~	~~»Xylenes (total) (XYL)~~	~~1330-20-7~~	~~D~~	~~230000.0~~	~~805000.0~~
	~~Z~~				
~~500.~~	~~»Zinc and compounds (Zn)~~	~~7440-66-6~~	~~D~~	~~35000.0~~	~~122500.0~~
~~501.~~	~~Zinc cyanide~~	~~557-21-1~~	~~ND~~	~~5800.0~~	~~20300.0~~
~~502.~~	~~Zinc phosphide~~	~~1314-84-7~~	~~NA~~	~~35.0~~	~~123.0~~
~~503.~~	~~»Zineb~~	~~12122-67-7~~	~~D~~	~~5800.0~~	~~20300.0~~

~~»~~ ~~Chemicals requested by DEQ~~
~~TT~~ ~~Treatment Technology~~
~~NA~~ ~~Not Available~~
~~ND~~ ~~Not Determined~~
~~su~~ ~~Based on Surrogate RfD~~
~~**~~ ~~no RFD, HBGL based on Slope~~
~~xx~~ ~~no SLOPE FACTOR, based on RFD~~
~~##~~ ~~HBGL not based on RFD or SLOPE FACTOR~~
~~(If Lead, based on EPA biokinetic)~~

APPENDIX A
ARIZONA SOIL REMEDIATION LEVELS (SRLs)

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
A					
1	Acenaphthene	83-32-9	D	3900.0	41000.0
2	Acephate	30560-19-1	C	260.0	2200.0
3	>>Acetaldehyde	75-07-0	B2	39.0	150.0
4	Acetochlor	34256-82-1	D	1300.0	14000.0
5	>>Acetone	67-64-1	D	2100.0	8800.0
6	Acetone cyanohydrin	75-86-5	D	52.0	550.0
7	>>Acetonitrile	75-05-8	D	220.0	1200.0
8	>>Acetophenone	98-86-2	D	0.49	1.6
9	Acifluorfen	62476-59-9	D	850.0	8900.0
10	>>Acrolein	107-02-8	C	0.10	0.34
11	Acrylamide	79-06-1	B2	0.98	4.2
12	Acrylic acid	79-10-7	D	31000.0	290000.0
13	>>Acrylonitrile	107-13-1	B1	1.9	4.7
14	Alachlor	15972-60-8	B2	55.0	240.0
15	Alar	1596-84-5	D	9800.0	100000.0
16	Aldicarb	116-06-3	D	65.0	680.0
17	Aldicarb sulfone	1646-88-4	D	65.0	680.0
18	Aldrin	309-00-2	B2	0.26	1.1
19	Ally	5585-64-8	D	16000.0	170000.0
20	Allyl alcohol	107-18-6	D	330.0	3400.0
21	Allyl chloride	107-05-1	C	3200.0	33000.0
22	Aluminum	7429-90-5	D	77000.0	1000000.0
23	Aluminum phosphide	20859-73-8	D	31.0	680.0
24	Amdro	67485-29-4	D	20.0	200.0
25	Ametryn	834-12-8	D	590.0	6100.0
26	m-Aminophenol	591-27-5	D	4600.0	48000.0
27	4-Aminopyridine	504-24-5	D	1.3	14.0
28	Amitraz	33089-61-1	D	160.0	1700.0
29	>>Ammonia	7664-41-7	D	2200.0	58000.0
30	Ammonium sulfamate	7773-06-0	D	13000.0	140000.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
31	Aniline	62-53-3	B2	19.0	200.0
32	Anthracene	120-12-7	D	20000.0	200000.0
33	Antimony and compounds	7440-36-0	D	31.0	680.0
34	Antimony pentoxide	1314-60-9	D	38.0	850.0
35	Antimony potassium tartrate	28300-74-5	D	69.0	1500.0
36	Antimony tetroxide	1332-81-6	D	31.0	680.0
37	Antimony trioxide	1309-64-4	D	31.0	680.0
38	Apollo	74115-24-5	C	850.0	8900.0
39	Aramite	140-57-8	B2	180.0	760.0
40	Arsenic	7440-38-2	A	0.38	2.4
41	Assure	76578-12-6	D	590.0	6100.0
42	Asulam	3337-71-1	D	3300.0	34000.0
43	Atrazine	1912-24-9	C	20.0	86.0
44	Avermectin B1	65195-55-3	D	26.0	270.0
45	Azobenzene	103-33-3	B2	40.0	170.0
	B				
46	Barium and compounds	7440-39-3	D	5300.0	110000.0
47	Barium cyanide	542-62-1	D	7700.0	170000.0
48	Baygon	114-26-1	D	260.0	2700.0
49	Bayleton	43121-43-3	D	2000.0	20000.0
50	Baythroid	68359-37-5	D	1600.0	17000.0
51	Benefin	1861-40-1	D	20000.0	200000.0
52	Benomyl	17804-35-2	D	3300.0	34000.0
53	Bentazon	25057-89-0	D	160.0	1700.0
54	Benzaldehyde	100-52-7	D	6500.0	68000.0
55	Benz[a]anthracene	56-55-3	B2	6.1	26.0
56	>>Benzene	71-43-2	A	0.62	1.4
57	Benzidine	92-87-5	A	0.0019	0.0083
58	Benzo[a]pyrene	50-32-8	B2	0.61	2.6
59	Benzo[b]fluoranthene	205-99-2	B2	6.1	26.0
60	Benzoic acid	65-85-0	D	260000.0	1000000.0
61	Benzo[k]fluoranthene	207-08-9	B2	61.0	260.0
62	Benzotrichloride	98-07-7	B2	0.34	1.5
63	Benzyl alcohol	100-51-6	D	20000.0	200000.0
64	>>Benzyl chloride	100-44-7	B2	8.0	20.0
65	Beryllium and compounds	7440-41-7	B2	1.4	11.0
66	Bidrin	141-66-2	D	6.5	68.0
67	Biphenthrin (Talstar)	82657-04-3	D	980.0	10000.0
68	1,1-Biphenyl	92-52-4	D	3300.0	34000.0
69	>>Bis(2-chloroethyl)ether	111-44-4	B2	0.43	0.97
70	>>Bis(2-chloroisopropyl)ether	39638-32-9	C	25.0	67.0
71	>>Bis(chloromethyl)ether	542-88-1	A	0.0002	0.0004
72	Bis(2-chloro-1-methylethyl)ether	108-60-1	C	63.0	270.0
73	Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	B2	320.0	1400.0
74	Bisphenol A	80-05-7	D	3300.0	34000.0
75	Boron	7440-42-8	D	5900.0	61000.0
76	>>Bromodichloromethane	75-27-4	B2	6.3	14.0
77	Bromoform (tribromomethane)	75-25-2	B2	560.0	2400.0
78	>>Bromomethane	74-83-9	D	6.8	23.0
79	Bromophos	2104-96-3	D	330.0	3400.0
80	Bromoxynil	1689-84-5	D	1300.0	14000.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
81	Bromoxynil octanoate	1689-99-2	D	1300.0	14000.0
82	>>1,3-Butadiene	106-99-0	B2	0.064	0.14
83	1-Butanol	71-36-3	D	6500.0	68000.0
84	Butylate	2008-41-5	D	3300.0	34000.0
85	Butyl benzyl phthalate	85-68-7	C	13000.0	140000.0
86	Butylphthalyl butylglycolate	85-70-1	D	65000.0	680000.0
	C				
87	Cacodylic acid	75-60-5	D	200.0	2000.0
88	Cadmium and compounds	7440-43-9	B1	38.0	850.0
89	Calcium cyanide	592-01-8	D	3100.0	68000.0
90	Caprolactam	105-60-2	D	33000.0	340000.0
91	Captafol	2425-06-1	C	130.0	1400.0
92	Captan	133-06-2	D	1300.0	5500.0
93	Carbaryl	63-25-2	D	6500.0	68000.0
94	Carbazole	86-74-8	B2	220.0	950.0
95	Carbofuran	1563-66-2	E	330.0	3400.0
96	>>Carbon disulfide	75-15-0	D	7.5	24.0
97	>>Carbon tetrachloride	56-23-5	B2	1.6	5.0
98	Carbosulfan	55285-14-8	D	650.0	6800.0
99	Carboxin	5234-68-4	D	6500.0	68000.0
100	Chloral	302-17-0	D	130.0	1400.0
101	Chloramben	133-90-4	D	980.0	10000.0
102	Chloranil	118-75-2	C	11.0	47.0
103	Chlordane	57-74-9	B2	3.4	15.0
104	Chlorimuron-ethyl	90982-32-4	D	1300.0	14000.0
105	Chlorine cyanide	506-77-4	D	3800.0	85000.0
106	Chloroacetic acid	79-11-8	D	130.0	1400.0
107	2-Chloroacetophenone	532-27-4	D	0.56	5.9
108	4-Chloroaniline	106-47-8	D	260.0	2700.0
109	>>Chlorobenzene	108-90-7	D	65.0	220.0
110	Chlorobenzilate	510-15-6	B2	16.0	71.0
111	p-Chlorobenzoic acid	74-11-3	D	13000.0	140000.0
112	4-Chlorobenzotrifluoride	98-56-6	D	1300.0	14000.0
113	>>2-Chloro-1,3-butadiene	126-99-8	D	3.6	12.0
114	>>1-Chlorobutane	109-69-3	D	710.0	2400.0
115	>>1-Chloro-1,1-difluoroethane	75-68-3	D	340.0	340.0
116	>>Chlorodifluoromethane	75-45-6	D	340.0	340.0
117	>>Chloroform	67-66-3	B2	2.5	5.3
118	>>Chloromethane	74-87-3	C	12.0	26.0
119	4-Chloro-2-methylaniline	95-69-2	B2	7.7	33.0
120	4-Chloro-2-methylaniline hydrochloride	3165-93-3	B2	9.7	41.0
121	beta-Chloronaphthalene	91-58-7	D	5200.0	55000.0
122	o-Chloronitrobenzene	88-73-3	B2	180.0	760.0
123	p-Chloronitrobenzene	100-00-5	B2	250.0	1100.0
124	>>2-Chlorophenol	95-57-8	D	91.0	370.0
125	>>2-Chloropropane	75-29-6	D	170.0	580.0
126	Chlorothalonil	1897-45-6	B2	400.0	1700.0
127	>> * o-Chlorotoluene	95-49-8	D	160.0	550.0
128	Chlorpropham	101-21-3	D	13000.0	140000.0
129	Chlorpyrifos	2921-88-2	D	200.0	2000.0
130	Chlorpyrifos-methyl	5598-13-0	D	650.0	6800.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
131	Chlorsulfuron	64902-72-3	D	3300.0	34000.0
132	Chlorthiophos	602-38-56-4	D	52.0	550.0
133	Chromium, Total (1/6 ratio Cr VI/Cr III)	N/A	D	2100.0	4500.0
134	Chromium III	16065-83-1	D	77000.0	1000000.0
135	Chromium VI	7440-47-3	A	30.0	64.0
136	Chrysene	218-01-9	B2	610.0	2600.0
137	Cobalt	7440-48-4	D	4600.0	97000.0
138	Copper and compounds	7440-50-8	D	2800.0	63000.0
139	Copper cyanide	544-92-3	D	380.0	8500.0
140	>>Crotonaldehyde	123-73-9	C	0.052	0.11
141	>>Cumene	98-82-8	D	19.0	62.0
142	Cyanazine	21725-46-2	D	5.3	23.0
143	Cyanide, Free	57-12-5	D	1300.0	14000.0
144	Cyanogen	460-19-5	D	2600.0	27000.0
145	Cyanogen bromide	506-68-3	D	5900.0	61000.0
146	Cyanogen chloride	506-77-4	D	3300.0	34000.0
147	Cyclohexanone	108-94-1	D	330000.0	1000000.0
148	Cyclohexylamine	108-91-8	D	13000.0	140000.0
149	Cyhalothrin/Karate	68085-85-8	D	330.0	3400.0
150	Cypermethrin	52315-07-8	D	650.0	6800.0
151	Cyromazine	66215-27-8	D	490.0	5100.0
	D				
152	Dacthal	1861-32-1	D	650.0	6800.0
153	Dalapon	75-99-0	D	2000.0	20000.0
154	Danitol	39515-41-8	D	1600.0	17000.0
155	DDD	72-54-8	B2	19.0	80.0
156	DDE	72-55-9	B2	13.0	56.0
157	DDT	50-29-3	B2	13.0	56.0
158	Decabromodiphenyl ether	1163-19-5	C	650.0	6800.0
159	Demeton	8065-48-3	D	2.6	27.0
160	Diallate	2303-16-4	B2	73.0	310.0
161	Diazinon	333-41-5	E	59.0	610.0
162	Dibenz[ah]anthracene	53-70-3	B2	0.61	2.6
163	Dibenzofuran	132-64-9	D	260.0	2700.0
164	1,4-Dibromobenzene	106-37-6	D	650.0	6800.0
165	Dibromochloromethane	124-48-1	C	53.0	230.0
166	1,2-Dibromo-3-chloropropane	96-12-8	B2	3.2	14.0
167	>>1,2-Dibromoethane	106-93-4	B2	0.049	0.2
168	Dibutyl phthalate	84-74-2	D	6500.0	68000.0
169	Dicamba	1918-00-9	D	2000.0	20000.0
170	>> * 1,2-Dichlorobenzene	95-50-1	D	1100.0	3900.0
171	>> * 1,3-Dichlorobenzene	541-73-1	D	500.0	2000.0
172	1,4-Dichlorobenzene	106-46-7	C	190.0	790.0
173	3,3-Dichlorobenzidine	91-94-1	B2	9.9	42.0
174	>>1,4-Dichloro-2-butene	764-41-0	B2	0.074	0.17
175	>>Dichlorodifluoromethane	75-71-8	D	94.0	310.0
176	>>1,1-Dichloroethane	75-34-3	C	500.0	1700.0
177	>>1,2-Dichloroethane (EDC)	107-06-2	B2	2.5	5.5
178	>>1,1-Dichloroethylene	75-35-4	C	0.36	0.8
179	>>1,2-Dichloroethylene (cis)	156-59-2	D	31.0	100.0
180	>>1,2-Dichloroethylene (trans)	156-60-5	D	78.0	270.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
181	>>1,2-Dichloroethylene (mixture)	540-59-0	D	35.0	120.0
182	2,4-Dichlorophenol	120-83-2	D	200.0	2000.0
183	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	94-82-6	D	520.0	5500.0
184	2,4-Dichlorophenoxyacetic Acid (2,4-D)	94-75-7	D	650.0	6800.0
185	>>1,2-Dichloropropane	78-87-5	B2	3.1	6.8
186	>>1,3-Dichloropropene	542-75-6	B2	2.4	5.5
187	2,3-Dichloropropanol	616-23-9	D	200.0	2000.0
188	Dichlorvos	62-73-7	B2	15.0	66.0
189	Dicofol	115-32-2	C	10.0	43.0
190	Dieldrin	60-57-1	B2	0.28	1.2
191	Diethylene glycol, monobutyl ether	112-34-5	D	370.0	3900.0
192	Diethylene glycol, monoethyl ether	111-90-0	D	130000.0	1000000.0
193	Diethylformamide	617-84-5	D	720.0	7500.0
194	Di(2-ethylhexyl)adipate	103-23-1	C	3700.0	16000.0
195	Diethyl phthalate	84-66-2	D	52000.0	550000.0
196	Diethylstilbestrol	56-53-1	A	0.0001	0.0004
197	Difenzoquat (Avenge)	43222-48-6	D	5200.0	55000.0
198	Diflubenzuron	35367-38-5	D	1300.0	14000.0
199	Diisopropyl methylphosphonate	1445-75-6	D	5200.0	55000.0
200	Dimethipin	55290-64-7	C	1300.0	14000.0
201	Dimethoate	60-51-5	D	13.0	140.0
202	3,3'-Dimethoxybenzidine	119-90-4	B2	320.0	1400.0
203	>>Dimethylamine	124-40-3	D	0.07	0.24
204	N-N-Dimethylaniline	121-69-7	D	130.0	1400.0
205	2,4-Dimethylaniline	95-68-1	C	5.9	25.0
206	2,4-Dimethylaniline hydrochloride	21436-96-4	C	7.7	33.0
207	3,3'-Dimethylbenzidine	119-93-7	B2	0.48	2.1
208	1,1-Dimethylhydrazine	57-14-7	B, C	1.7	7.3
209	1,2-Dimethylhydrazine	540-73-8	B2	0.12	0.52
210	N,N-Dimethylformamide	68-12-2	D	6500.0	68000.0
211	2,4-Dimethylphenol	105-67-9	D	1300.0	14000.0
212	2,6-Dimethylphenol	576-26-1	D	39.0	410.0
213	3,4-Dimethylphenol	95-65-8	D	65.0	680.0
214	Dimethyl phthalate	131-11-3	D	650000.0	1000000.0
215	Dimethyl terephthalate	120-61-6	D	6500.0	68000.0
216	4,6-Dinitro-o-cyclohexyl phenol	131-89-5	D	130.0	1400.0
217	1,3-Dinitrobenzene	99-65-0	D	6.5	68.0
218	1,2-Dinitrobenzene	528-29-0	D	26.0	270.0
219	1,4-Dinitrobenzene	100-25-4	D	26.0	270.0
220	2,4-Dinitrophenol	51-28-5	D	130.0	1400.0
221	Dinitrotoluene mixture	25321-14-6	B2	6.5	28.0
222	2,4-Dinitrotoluene	121-14-2	B2	130.0	1400.0
223	2,6-Dinitrotoluene	606-20-2	D	65.0	680.0
224	Dinoseb	88-85-7	D	65.0	680.0
225	di-n-Octyl phthalate	117-84-0	D	1300.0	14000.0
226	1,4-Dioxane	123-91-1	B2	400.0	1700.0
227	Diphenamid	957-51-7	D	2000.0	20000.0
228	Diphenylamine	122-39-4	D	1600.0	17000.0
229	1,2-Diphenylhydrazine	122-66-7	B2	5.6	24.0
230	Diquat	85-00-7	D	140.0	1500.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
231	Direct black 38	1937-37-7	A	0.052	0.22
232	Direct blue 6	2602-46-2	A	0.055	0.24
233	Direct brown 95	16071-86-6	A	0.048	0.21
234	Disulfoton	298-04-4	E	2.6	27.0
235	1,4-Dithiane	505-29-3	D	650.0	6800.0
236	Diuron	330-54-1	D	130.0	1400.0
237	Dodine	2439-10-3	D	260.0	2700.0
	E				
238	Endosulfan	115-29-7	D	390.0	4100.0
239	Endothall	145-73-3	D	1300.0	14000.0
240	Endrin	72-20-8	D	20.0	200.0
241	>>Epichlorohydrin	106-89-8	B2	7.5	25.0
242	1,2-Epoxybutane	106-88-7	D	370.0	3900.0
243	EPTC (S-Ethyl dipropylthiocarbamate)	759-94-4	D	1600.0	17000.0
244	Ethephon (2-chloroethyl phosphonic acid)	16672-87-0	D	330.0	3400.0
245	Ethion	563-12-2	D	33.0	340.0
246	2-Ethoxyethanol	110-80-5	D	26000.0	270000.0
247	2-Ethoxyethanol acetate	111-15-9	D	20000.0	200000.0
248	>> * Ethyl acetate	141-78-6	D	18000.0	39000.0
249	>>Ethyl acrylate	140-88-5	B2	2.1	4.5
250	>> * Ethylbenzene	100-41-4	D	1500.0	2700.0
251	Ethylene cyanohydrin	109-78-4	D	20000.0	200000.0
252	Ethylene diamine	107-15-3	D	1300.0	14000.0
253	Ethylene glycol	107-21-1	D	130000.0	1000000.0
254	Ethylene glycol, monobutyl ether	111-76-2	D	370.0	3900.0
255	>>Ethylene oxide	75-21-8	B1	1.3	3.2
256	Ethylene thiourea (ETU)	96-45-7	B2	5.2	55.0
257	>> * Ethyl chloride	75-00-3	D	1100.0	4200.0
258	>> * Ethyl ether	60-29-7	D	3800.0	3800.0
259	>> * Ethyl methacrylate	97-63-2	D	210.0	690.0
260	Ethyl p-nitrophenyl phenylphosphorothioate	2104-64-5	D	0.65	6.8
261	Ethylphthalyl ethyl glycolate	84-72-0	D	200000.0	1000000.0
262	Express	101200-48-0	D	520.0	5500.0
	E				
263	Fenamiphos	22224-92-6	D	16.0	170.0
264	Fluometuron	2164-17-2	D	850.0	8900.0
265	Fluoranthene	206-44-0	D	2600.0	27000.0
266	Fluorene	86-73-7	D	2600.0	27000.0
267	Fluorine (soluble fluoride)	7782-41-4	D	3900.0	41000.0
268	Fluoridone	59756-60-4	D	5200.0	55000.0
269	Flurprimidol	56425-91-3	D	1300.0	14000.0
270	Flutolanil	66332-96-5	D	3900.0	41000.0
271	Fluvalinate	69409-94-5	D	650.0	6800.0
272	Folpet	133-07-3	B2	1300.0	5500.0
273	Fomesafen	72178-02-0	C	23.0	100.0
274	Fonofos	944-22-9	D	130.0	1400.0
275	Formaldehyde	50-00-0	B1	9800.0	100000.0
276	Formic Acid	64-18-6	D	130000.0	1000000.0
277	Fosetyl-al	39148-24-8	C	200000.0	1000000.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
278	>>Furan	110-00-9	D	2.5	8.5
279	Furazolidone	67-45-8	B2	1.2	5.0
280	Furfural	98-01-1	D	200.0	2000.0
281	Furium	531-82-8	B2	0.089	0.38
282	Furmecyclox	60568-05-0	B2	150.0	640.0
	G				
283	Glufosinate-ammonium	77182-82-2	D	26.0	270.0
284	Glycidaldehyde	765-34-4	B2	26.0	270.0
285	Glyphosate	1071-83-6	D	6500.0	68000.0
	H				
286	Haloxyfop-methyl	69806-40-2	D	3.3	34.0
287	Harmony	79277-27-3	D	850.0	8900.0
288	Heptachlor	76-44-8	B2	0.99	4.2
289	Heptachlor epoxide	1024-57-3	B2	0.49	2.1
290	Hexabromobenzene	87-82-1	D	130.0	1400.0
291	Hexachlorobenzene	118-74-1	B2	2.8	12.0
292	Hexachlorobutadiene	87-68-3	C	13.0	140.0
293	HCH (alpha)	319-84-6	B2	0.71	3.0
294	HCH (beta)	319-85-7	C	2.5	11.0
295	HCH (gamma) Lindane	58-89-9	B2-C	3.4	15.0
296	HCH-technical	608-73-1	B2	2.5	11.0
297	Hexachlorocyclopentadiene	77-47-4	D	450.0	4600.0
298	Hexachlorodibenzo-p-dioxin mixture (HxCDD)	19408-74-3	B2	0.00072	0.0031
299	Hexachloroethane	67-72-1	C	65.0	680.0
300	Hexachlorophene	70-30-4	D	20.0	200.0
301	Hexahydro-1,3,5-trinitro-1,3,5-triazine	121-82-4	C	40.0	170.0
302	>> * n-Hexane	110-54-3	D	120.0	400.0
303	Hexazinone	51235-04-2	D	2200.0	22000.0
304	Hydrazine, hydrazine sulfate	302-01-2	B2	1.5	6.4
305	Hydrocarbons (C_9+)	N/A	N/A	4100.0	18000.0
306	Hydrogen chloride	7647-01-0	D	370.0	3900.0
307	>>Hydrogen cyanide	74-90-8	D	11.0	35.0
308	p-Hydroquinone	123-31-9	D	2600.0	27000.0
	I				
309	Imazalil	35554-44-0	D	850.0	8900.0
310	Imazaquin	81335-37-7	D	16000.0	170000.0
311	Indeno[1,2,3-cd]pyrene	193-39-5	B2	6.1	26.0
312	Iprodione	36734-19-7	D	2600.0	27000.0
313	>> * Isobutanol	78-83-1	D	11000.0	42000.0
314	Isophorone	78-59-1	C	4700.0	20000.0
315	Isopropalin	33820-53-0	D	980.0	10000.0
316	Isopropyl methyl phosphonic acid	1832-54-8	D	6500.0	68000.0
317	Isoxaben	82558-50-7	C	3300.0	34000.0
	K				
318	Kepone	143-50-0	B, C	0.25	1.1
	L				
319	Lactofen	77501-63-4	D	130.0	1400.0
320	Lead	7439-92-1	B2	400.0	2000.0
321	Lead (tetraethyl)	78-00-2	D	0.0065	0.068

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
322	Linuron	330-55-2	C	130.0	1400.0
323	Lithium	7439-93-2	D	1500.0	34000.0
324	Londax	83055-99-6	D	13000.0	140000.0
	M				
325	Malathion	121-75-5	D	1300.0	14000.0
326	Maleic anhydride	108-31-6	D	6500.0	68000.0
327	Maleic hydrazide	123-33-1	D	33000.0	340000.0
328	Malononitrile	109-77-3	D	1.3	14.0
329	Mancozeb	8018-01-7	D	2000.0	20000.0
330	Maneb	12427-38-2	D	330.0	3400.0
331	Manganese and compounds	7439-96-5	D	3200.0	43000.0
332	Mephosfolan	950-10-7	D	5.9	61.0
333	Mepiquat	24307-26-4	D	2000.0	20000.0
334	Mercuric chloride	7487-94-7	C	23.0	510.0
335	Mercury (elemental)	7439-97-6	D	6.7	180.0
336	Mercury (methyl)	22967-92-6	D	6.5	68.0
337	Merphos	150-50-5	D	2.0	20.0
338	Merphos oxide	78-48-8	D	2.0	20.0
339	Metalaxyl	57837-19-1	D	3900.0	41000.0
340	>>Methacrylonitrile	126-98-7	D	2.0	8.1
341	Methamidophos	10265-92-6	D	3.3	34.0
342	Methanol	67-56-1	D	33000.0	340000.0
343	Methidathion	950-37-8	C	65.0	680.0
344	Methomyl	16752-77-5	D	1600.0	17000.0
345	Methoxychlor	72-43-5	D	330.0	3400.0
346	2-Methoxyethanol	109-86-4	D	65.0	680.0
347	2-Methoxyethanol acetate	110-49-6	D	130.0	1400.0
348	2-Methoxy-5-nitroaniline	99-59-2	C	97.0	410.0
349	>>Methyl acetate	79-20-9	D	21000.0	88000.0
350	>>Methyl acrylate	96-33-3	D	69.0	230.0
351	2-Methylaniline (o-toluidine)	100-61-8	B2	19.0	79.0
352	2-Methylaniline hydrochloride	636-21-5	B2	25.0	110.0
353	Methyl chlorocarbonate	79-22-1	D	65000.0	680000.0
354	2-Methyl-4-chlorophenoxyacetic acid	94-74-6	D	33.0	340.0
355	4-(2-Methyl-4-chlorophenoxy) butyric acid	94-81-5	D	650.0	6800.0
356	2-(2-Methyl-4-chlorophenoxy) propionic acid	93-65-2	D	65.0	680.0
357	2-(2-Methyl-1,4-chlorophenoxy) propionic acid	16484-77-8	D	65.0	680.0
358	Methylcyclohexane	108-87-2	D	56000.0	590000.0
359	4,4'-Methylenebisbenzeneamine	101-77-9	D	18.0	76.0
360	4,4'-Methylene bis(2-chloroaniline)	101-14-4	B2	34.0	150.0
361	4,4'-Methylene bis(N,N'-dimethyl)aniline	101-61-1	B2	97.0	410.0
362	Methylene bromide	74-95-3	D	650.0	6800.0
363	>>Methylene chloride	75-09-2	B2	77.0	180.0
364	>>Methyl ethyl ketone	78-93-3	D	7100.0	27000.0
365	Methyl hydrazine	60-34-4	B, C	4.0	17.0
366	>>Methyl isobutyl ketone	108-10-1	D	770.0	2800.0
367	>> * Methyl methacrylate	80-62-6	D	760.0	2800.0
368	2-Methyl-5-nitroaniline	99-55-8	C	130.0	580.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
369	Methyl parathion	298-00-0	D	16.0	170.0
370	2-Methylphenëol	95-48-7	C	3300.0	34000.0
371	3-Methylphenol	108-39-4	C	3300.0	34000.0
372	4-Methylphenol	106-44-5	C	330.0	3400.0
373	>>Methyl styrene (mixture)	25013-15-4	D	120.0	520.0
374	>> * Methyl styrene (alpha)	98-83-9	D	890.0	3100.0
375	>>Methyl tertbutyl ether (MTBE)	1634-04-4	D	320.0	3300.0
376	Metolaclor (Dual)	51218-45-2	D	9800.0	100000.0
377	Metribuzin	21087-64-9	D	1600.0	17000.0
378	Mirex	2385-85-5	B2	2.5	11.0
379	Molinate	2212-67-1	D	130.0	1400.0
380	Molybdenum	7439-98-7	D	380.0	8500.0
381	Monochloramine	10599-90-3	D	6500.0	68000.0
	N				
382	Naled	300-76-5	D	130.0	1400.0
383	Naphthalene	91-20-3	D	2600.0	27000.0
384	Napropamide	15299-99-7	D	6500.0	68000.0
385	Nickel and compounds	7440-02-0	D	1500.0	34000.0
386	Nickel subsulfide	12035-72-2	A	5100.0	11000.0
387	Nitrapyrin	1929-82-4	D	98.0	1000.0
388	Nitrate	14797-55-8	D	100000.0	1000000.0
389	Nitrite	14797-65-0	D	6500.0	68000.0
390	2-Nitroaniline	88-74-4	D	3.9	41.0
391	>>Nitrobenzene	98-95-3	D	18.0	94.0
392	Nitrofurantoin	67-20-9	D	4600.0	48000.0
393	Nitrofurazone	59-87-0	B2	3.0	13.0
394	Nitroguanidine	556-88-7	D	6500.0	68000.0
395	>>N-Nitrosodi-n-butylamine	924-16-3	B2	0.22	0.55
396	N-Nitrosodiethanolamine	1116-54-7	B2	1.6	6.8
397	N-Nitrosodiethylamine	55-18-5	B2	0.03	0.13
398	N-Nitrosodimethylamine	62-75-9	B2	0.087	0.37
399	N-Nitrosodiphenylamine	86-30-6	B2	910.0	3900.0
400	N-Nitroso di-n-propylamine	621-64-7	B2	0.63	2.7
401	N-Nitroso-N-methylethylamine	10595-95-6	B2	0.20	0.87
402	N-Nitrosopyrrolidine	930-55-2	B2	2.1	9.1
403	m-Nitrotoluene	99-08-1	D	650.0	6800.0
404	p-Nitrotoluene	99-99-0	D	650.0	6800.0
405	Norflurazon	27314-13-2	D	2600.0	27000.0
406	NuStar	85509-19-9	D	46.0	480.0
	O				
407	Octabromodiphenyl ether	32536-52-0	D	200.0	2000.0
408	Octahydro-1357-tetranitro-1357- tetrazocine	2691-41-0	D	3300.0	34000.0
409	Octamethylpyrophosphoramide	152-16-9	D	130.0	1400.0
410	Oryzalin	19044-88-3	C	3300.0	34000.0
411	Oxadiazon	19666-30-9	D	330.0	3400.0
412	Oxamyl	23135-22-0	E	1600.0	17000.0
413	Oxyfluorfen	42874-03-3	D	200.0	2000.0
	P				
414	Paclobutrazol	76738-62-0	D	850.0	8900.0
415	Paraquat	4685-14-7	C	290.0	3100.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
416	Parathion	56-38-2	C	390.0	4100.0
417	Pebulate	1114-71-2	D	3300.0	34000.0
418	Pendimethalin	40487-42-1	D	2600.0	27000.0
419	Pentabromo-6-chloro cyclohexane	87-84-3	C	190.0	830.0
420	Pentabromodiphenyl ether	32534-81-9	D	130.0	1400.0
421	Pentachlorobenzene	608-93-5	D	52.0	550.0
422	Pentachloronitrobenzene	82-68-8	C	17.0	73.0
423	Pentachlorophenol	87-86-5	B2	25.0	79.0
424	Permethrin	52645-53-1	D	3300.0	34000.0
425	Phenmedipham	13684-63-4	D	16000.0	170000.0
426	Phenol	108-95-2	D	39000.0	410000.0
427	m-Phenylenediamine	108-45-2	D	390.0	4100.0
428	p-Phenylenediamine	106-50-3	D	12000.0	130000.0
429	Phenylmercuric acetate	62-38-4	D	5.2	55.0
430	2-Phenylphenol	90-43-7	C	2300.0	9800.0
431	Phorate	298-02-2	E	13.0	140.0
432	Phosmet	732-11-6	D	1300.0	14000.0
433	Phosphine	7803-51-2	D	20.0	200.0
434	Phthalic anhydride	85-44-9	D	130000.0	1000000.0
435	Picloram	1918-02-1	D	4600.0	48000.0
436	Pirimiphos-methyl	23505-41-1	D	650.0	6800.0
437	Polychlorinated biphenyls (PCBs)	1336-36-3	B2	0.66	3.4
438	Potassium cyanide	151-50-8	D	3300.0	34000.0
439	Potassium silver cyanide	506-61-6	D	13000.0	140000.0
440	Prochloraz	67747-09-5	C	30.0	130.0
441	Profluralin	26399-36-0	D	390.0	4100.0
442	Prometon	1610-18-0	D	980.0	10000.0
443	Prometryn	7287-19-6	D	260.0	2700.0
444	Pronamide	23950-58-5	C	4900.0	51000.0
445	Propachlor	1918-16-7	D	850.0	8900.0
446	Propanil	709-98-8	D	330.0	3400.0
447	Propargite	2312-35-8	D	1300.0	14000.0
448	Propargyl alcohol	107-19-7	D	130.0	1400.0
449	Propazine	139-40-2	C	1300.0	14000.0
450	Propham	122-42-9	D	1300.0	14000.0
451	Propiconazole	60207-90-1	D	850.0	8900.0
452	Propylene glycol	57-55-6	D	1000000.0	1000000.0
453	Propylene glycol, monoethyl ether	111-35-3	D	46000.0	480000.0
454	Propylene glycol, monomethyl ether	107-98-2	D	46000.0	480000.0
455	>>Propylene oxide	75-56-9	B2	19.0	79.0
456	Pursuit	81335-77-5	D	16000.0	170000.0
457	Pydrin	51630-58-1	D	1600.0	17000.0
458	Pyrene	129-00-0	D	2000.0	20000.0
459	Pyridine	110-86-1	D	65.0	680.0
	Q				
460	Quinalphos	13593-03-8	D	33.0	340.0
461	Quinoline	91-22-5	C	0.37	1.6
	R				
462	RDX (Cyclonite)	121-82-4	C	40.0	170.0
463	Resmethrin	10453-86-8	D	2000.0	20000.0
464	Ronnel	299-84-3	D	3300.0	34000.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
465	Rotenone	83-79-4	D	260.0	2700.0
S					
466	Savey	78578-05-0	D	1600.0	17000.0
467	Selenious Acid	7783-00-8	D	330.0	3400.0
468	Selenium	7782-49-2	D	380.0	8500.0
469	Selenourea	630-10-4	D	330.0	3400.0
470	Sethoxydim	74051-80-2	D	5900.0	61000.0
471	Silver and compounds	7440-22-4	D	380.0	8500.0
472	Silver cyanide	506-64-9	D	6500.0	68000.0
473	Simazine	122-34-9	C	37.0	160.0
474	Sodium azide	26628-22-8	D	260.0	2700.0
475	Sodium cyanide	143-33-9	D	2600.0	27000.0
476	Sodium diethyldithiocarbamate	148-18-5	C	16.0	71.0
477	Sodium fluoroacetate	62-74-8	D	1.3	14.0
478	Sodium metavanadate	13718-26-8	D	65.0	680.0
479	Strontium, stable	7440-24-6	D	46000.0	1000000.0
480	Strychnine	57-24-9	D	20.0	200.0
481	>> * Styrene	100-42-5	C	3300.0	3300.0
482	Systhane	88671-89-0	D	1600.0	17000.0
	T				
483	2,3,7,8-TCDD (dioxin)	1746-01-6	B2	0.000038	0.00024
484	Tebuthiuron	34014-18-1	D	4600.0	48000.0
485	Temephos	3383-96-8	D	1300.0	14000.0
486	Terbacil	5902-51-2	E	850.0	8900.0
487	Terbufos	13071-79-9	D	1.6	17.0
488	Terbutryn	886-50-0	D	65.0	680.0
489	1,2,4,5-Tetrachlorobenzene	95-94-3	D	20.0	200.0
490	>>1,1,1,2-Tetrachloroethane	630-20-6	C	23.0	54.0
491	>>1,1,2,2-Tetrachloroethane	79-34-5	C	4.4	11.0
492	>>Tetrachloroethylene (PCE)	127-18-4	B2	53.0	170.0
493	2,3,4,6-Tetrachlorophenol	58-90-2	D	2000.0	20000.0
494	p,a,a,a-Tetrachlorotoluene	5216-25-1	B2	0.22	0.95
495	Tetrachlorovinphos	961-11-5	C	190.0	790.0
496	Tetraethyldithiopyrophosphate	3689-24-5	D	33.0	340.0
497	Thallic oxide	1314-32-5	D	5.4	120.0
498	Thallium acetate	563-68-8	D	6.9	150.0
499	Thallium carbonate	6533-73-9	D	6.1	140.0
500	Thallium chloride	7791-12-0	D	6.1	140.0
501	Thallium nitrate	10102-45-1	D	6.9	150.0
502	Thallium selenite	12039-52-0	D	6.9	150.0
503	Thallium sulfate	7446-18-6	D	6.1	140.0
504	Thiobencarb	28249-77-6	D	650.0	6800.0
505	2-(Thiocyanomethylthio)- benzothiazole	3689-24-5	D	2000.0	20000.0
506	Thiofanox	39196-18-4	D	20.0	200.0
507	Thiophanate-methyl	23564-05-8	D	5200.0	55000.0
508	Thiram	137-26-8	D	330.0	3400.0
509	Tin and compounds	7440-31-5	D	46000.0	1000000.0
510	>> * Toluene	108-88-3	D	790.0	2700.0
511	Toluene-2,4-diamine	95-80-7	B2	1.4	6.0
512	Toluene-2,5-diamine	95-70-5	D	39000.0	410000.0
513	Toluene-2,6-diamine	823-40-5	C	13000.0	140000.0

	CHEMICAL NAME	CAS NUMBER	CANCER GROUP	RESIDENTIAL (mg/kg	NON RESIDENTIAL (mg/kg)
514	p-Toluidine	106-49-0	C	23.0	100.0
515	Toxaphene	8001-35-2	B2	4.0	17.0
516	Tralomethrin	66841-25-6	D	490.0	5100.0
517	Triallate	2303-17-5	D	850.0	8900.0
518	Triasulfuron	82097-50-5	D	650.0	6800.0
519	1,2,4-Tribromobenzene	615-54-3	D	330.0	3400.0
520	Tributyltin oxide (TBTO)	56-35-9	D	2.0	20.0
521	2,4,6-Trichloroaniline	634-93-5	C	130.0	560.0
522	2,4,6-Trichloroaniline hydrochloride	33663-50-2	C	150.0	660.0
523	>> * 1,2,4-Trichlorobenzene	120-82-1	D	570.0	4700.0
524	>> * 1,1,1-Trichloroethane	71-55-6	D	1200.0	4800.0
525	>>1,1,2-Trichloroethane	79-00-5	C	6.5	15.0
526	>>Trichloroethylene (TCE)	79-01-6	B2	27.0	70.0
527	>>Trichlorofluoromethane	75-69-4	D	380.0	1300.0
528	2,4,5-Trichlorophenol	95-95-4	D	6500.0	68000.0
529	2,4,6-Trichlorophenol	88-06-2	B2	400.0	1700.0
530	2,4,5-Trichlorophenoxyacetic Acid	93-76-5	D	650.0	6800.0
531	2-(2,4,5-Trichlorophenoxy) propionic acid	93-72-1	D	520.0	5500.0
532	>>1,1,2-Trichloropropane	598-77-6	D	15.0	50.0
533	>>1,2,3-Trichloropropane	96-18-4	B2	0.014	0.03
534	>>1,2,3-Trichloropropene	96-19-5	D	11.0	38.0
535	>> * 1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	D	10000.0	10000.0
536	Tridiphane	58138-08-2	D	200.0	2000.0
537	>>Triethylamine	121-44-8	D	23.0	84.0
538	Trifluralin	1582-09-8	C	490.0	2500.0
539	Trimethyl phosphate	512-56-1	B2	120.0	520.0
540	1,3,5-Trinitrobenzene	99-35-4	D	3.3	34.0
541	Trinitrophenylmethylnitramine	479-45-8	D	650.0	6800.0
542	2,4,6-Trinitrotoluene	118-96-7	C	33.0	340.0
	V				
543	Vanadium	7440-62-2	D	540.0	12000.0
544	Vanadium pentoxide	1314-62-1	D	690.0	15000.0
545	Vanadium sulfate	13701-70-7	D	1500.0	34000.0
546	Vernam	1929-77-7	D	65.0	680.0
547	Vinclozolin	50471-44-8	D	1600.0	17000.0
548	>>Vinyl acetate	108-05-4	D	780.0	2600.0
549	>>Vinyl bromide	593-60-2	B2	1.9	4.1
550	>>Vinyl chloride	75-01-4	A	0.016	0.035
	W				
551	Warfarin	81-81-2	D	20.0	200.0
	X				
552	>> * Xylene (mixed)	1330-20-7	D	2800.0	2800.0
	Z				
553	Zinc	7440-66-6	D	23000.0	510000.0
554	Zinc phosphide	1314-84-7	D	23.0	510.0
555	Zinc cyanide	557-21-1	D	3300.0	34000.0
556	Zineb	12122-67-7	D	3300.0	34000.0

>> =Chemical meets volatility criteria

* = 1% Residual saturation analysis

CARCINOGENICITY CLASSIFICATIONS:

A = Known human carcinogen
B1 = Probable human carcinogen, with limited data indicating human carcinogenicity.
B2 = Probable human carcinogen, with inadequate or no evidence of carcinogenicity in humans. Sufficient evidence for carcinogenicity in laboratory animals.
C = Possible human carcinogen
D = Not classifiable as to human carcinogenicity
E = Evidence of noncarcinogenicity in humans

~~**Appendix B. Notice of Voluntary Environmental Mitigation Use Restriction by Owner(s)**~~

~~When recorded, mail to:~~

~~**NOTICE OF VOLUNTARY ENVIRONMENTAL MITIGATION USE RESTRICTION BY OWNER(S)**~~

~~Pursuant to A.R.S.§49-152(B), the owner(s) _____ of the following described property:~~
~~(Please Print)~~

~~*(insert legal description of entire parcel)*~~

~~has (have) remediated a portion of the above-described property, which remediated portion is described as follows:~~

~~*(insert legal description of remediated portion, the source of the release, and the remaining contaminants)*~~

~~The date when the remediation was competed is: _____~~

~~The undersigned owner voluntarily agrees to limit and restrict the use of the remediated portion of the property to nonresidential uses, as defined in A.R.S. §49-151(A).~~

~~Approved:~~

~~_____~~
~~(ADEQ official)~~

~~STATE OF ARIZONA~~
~~County of _____~~

~~This instrument was acknowledged before me this _____ day of _____, _____~~
~~by _____~~

~~_____~~
~~Notary Public~~

~~My commission expires: _____~~

~~_____~~
~~Signature of owner(s)~~

~~_____~~
~~Signature of owner(s)~~

~~STATE OF ARIZONA~~
~~County of _____~~

~~This instrument was acknowledged before me this _____ day of _____, _____~~
~~by _____~~

~~_____~~
~~Notary Public~~

~~My commission expires: _____~~

Appendix B. Notice of Voluntary Environmental Mitigation Use Restriction by Owner(s)

When recorded, mail to:

NOTICE OF VOLUNTARY ENVIRONMENTAL MITIGATION USE RESTRICTION BY OWNER(S)

Pursuant to A.R.S.§49-152(B), the owner(s) _____ of the following described property:
(Please Print)

(insert legal description of entire parcel)

has (have) remediated a portion of the above-described property, which remediated portion is described as follows:

(insert legal description of remediated portion, the source of the release, and the remaining contaminants)

The date when the remediation was competed is: _____

The undersigned owner voluntarily agrees to limit and restrict the use of the remediated portion of the property to nonresidential uses, as defined in A.R.S. §49-151(A).

Approved:

_____
(ADEQ official)

STATE OF ARIZONA
County of _____

This instrument was acknowledged before me this
_____ day of _____, _____
by _____

_____
Notary Public

My commission expires: _____

_____
Signature of owner(s)

_____
Signature of owner(s)

STATE OF ARIZONA
County of _____

This instrument was acknowledged before me this
_____ day of _____, _____
by _____

_____
Notary Public

My commission expires: _____

~~**Appendix C. Cancellation of Voluntary Environmental Mitigation Use Restriction by Owner(s)**~~
~~When recorded, mail to:~~

~~**CANCELLATION OF VOLUNTARY ENVIRONMENTAL MITIGATION USE RESTRICTION BY OWNER(S)**~~

~~Pursuant to A.R.S. §49-152(B), the owner(s)_____ of the following described property:~~
~~(Please Print)~~

~~*(insert legal description of entire parcel)*~~

~~recorded a Notice of Voluntary Mitigation Use Restriction By Owner(s) in the Office of the County Recorder of _____ County, Arizona, on the _____ day of _____, _____ in Document/Docket _____ at Page _____, affecting the following portion of the above-described property:~~

~~*(insert legal description of remediated portion)*~~

~~The undersigned owner(s) has (have) remediated the above-described portion of the property pursuant to the levels prescribed in A.R.S. § 49-152(C). Accordingly the above-described property may now be used for any lawful purpose. The date when the remediation was competed is:~~

~~_____~~
~~Signature of owner(s)~~

~~_____~~
~~Signature of owner(s)~~

~~Pursuant to A.R.S. §49-152(C), the undersigned hereby cancel(s) the above-described notice and declare(s) said notice to be of no further force and effect as of this _____ day of _____, _____.~~

~~_____~~
~~(ADEQ official)~~

~~STATE OF ARIZONA~~
~~County of _____~~

~~This instrument was acknowledged before me this _____ day of _____, _____~~
~~_____~~
~~by _____~~

~~_____~~
~~Notary Public~~
~~My commission expires: _____~~

~~STATE OF ARIZONA~~
~~County of _____~~

~~This instrument was acknowledged before me this _____ day of _____, _____~~
~~_____~~
~~by _____~~

~~_____~~
~~Notary Public~~
~~My commission expires: _____~~

Appendix C. Cancellation of Voluntary Environmental Mitigation Use Restriction by Owner(s)
When recorded, mail to:

CANCELLATION OF VOLUNTARY ENVIRONMENTAL MITIGATION USE RESTRICTION BY OWNER(S)

Pursuant to A.R.S. §49-152(B), the owner(s) _____ of the following described property:
(Please Print)

(insert legal description of entire parcel)

recorded a Notice of Voluntary Mitigation Use Restriction By Owner(s) in the Office of the County Recorder of _____ County, Arizona, on the _____ day of _____, _____ in Document/Docket _____ at Page _____, affecting the following portion of the above-described property:

(insert legal description of remediated portion)

The undersigned owner(s) has (have) remediated the above-described portion of the property pursuant to the levels prescribed in A.R.S. § 49-152(C). Accordingly the above-described property may now be used for any lawful purpose. The date when the remediation was competed is:

_____ _____
Signature of owner(s) Signature of owner(s)

Pursuant to A.R.S. §49-152(C), the undersigned hereby cancel(s) the above-described notice and declare(s) said notice to be of no further force and effect as of this _____ day of _____, _____.

_____
(ADEQ official)

STATE OF ARIZONA
County of _____

This instrument was acknowledged before me this _____ day of _____, _____

_____
by _____

_____
Notary Public
My commission expires: _____

STATE OF ARIZONA
County of _____

This instrument was acknowledged before me this _____ day of _____, _____

_____
by _____

_____
Notary Public
My commission expires: _____

~~**APPENDIX D. SELLER'S DISCLOSURE**~~

~~The seller's disclosure required by A.R.S. § 33-434.01 shall be sufficient if it is in substantially the following form of part V of the Arizona Department of Real Estate's "Seller's Property Disclosure Statement":~~

~~"Has any portion of the property been subject to soil remediation AND not cleaned up to residential use standards adopted by the Arizona Department of Environmental Quality?"~~

~~(Answers: Yes, No, Unknown)~~

NOTICE OF PROPOSED RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 8. DEPARTMENT OF ENVIRONMENTAL QUALITY
WASTE MANAGEMENT

PREAMBLE

1. **Sections Affected** — **Rulemaking Action**
   R18-8-101 — Amend

2. **The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):**
   Authorizing statutes: A.R.S. §§ 49-104(B)(4) and (B)(16), 49-152, and Laws 1995, Ch. 232, § 5

   Implementing statutes: A.R.S. §§ 49-151, 49-152, and 49-282

3. **The name and address of agency personnel with whom persons may communicate regarding the rulemaking:**

Name:	Katheryn A. Cross
Address:	Department of Environmental Quality 3033 North Central Avenue, Suite 824 Phoenix, Arizona 85012-2809
Telephone:	(602) 207-2222 or (800) 234-5677, ext. 2222 (Arizona only)
Fax:	(602) 207-2251

4. **An explanation of the rule, including the agency's reasons for initiating the rule:**
   This Notice of Proposed Rulemaking contains a reference which requires that in any instance where soil remediation is done under Chapter 8, it is to be conducted in accordance with A.A.C. R18-7-201 through R18-7-208. For further information, please see explanatory material for this rulemaking under 18 A.A.C. 7 in this issue of the *Register*.

   Current ADEQ statutes and rules require contaminated soil to be cleaned up (or remediated). This proposed rule answers the question of "how clean is clean" across all ADEQ soil cleanup programs. Generally speaking, soil which meets the remediation standards described in the rule is "clean enough."

   The purpose of this proposed rule is to establish permanent Department-wide standards applicable for soil remediation activities. A.R.S. § 49-152(A) set forth a 2-step process to be used in promulgating soil remediation standards: interim and final standards. Today's rule, which contains final standards, completes that 2nd step.

   A.R.S. §§ 49-131 and 49-152 do not mandate soil remediation; they set forth the methods by which remediation standards are calculated. The mandate to perform soil remediation is found in the specific program statutes for the Water Quality Assurance Revolving Fund (WQARD); the Underground Storage Tank (UST) Program; the Hazardous Waste Management Program; the Special Waste Management Program; and the Aquifer Protection Permit Program. The Department is not creating new duties to remediate with this proposed rule. Rather, this rule sets forth Department-wide remediation standards which are applied in addition to, and implement consistently, the existing program requirements.

5. **A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:**
   Not applicable.

6. **The preliminary summary of the economic, small business, and consumer impact:**
   Please see the summary of the economic, small business, and consumer impact for this rulemaking found under 18 A.A.C. 7 of this issue of the *Register*.

7. **The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:**

Name:	Mila Hill
Address:	Department of Environmental Quality 3033 North Central Avenue, Suite 844 Phoenix, Arizona 85012-2809
Telephone:	(602) 207-4435 or (800) 234-5677, ext. 4435 (Arizona only)
Fax:	(602) 207-2251

8. **The time, place, and nature of the proceedings for the adoption, amendment, or repeal of the rule, or if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:**

Date:	March 31, 1997
Time:	1 p.m.
Location:	Flagstaff City Council Chambers 211 West Aspen Avenue Flagstaff, Arizona
Date:	April 2, 1997
Time:	1 p.m.
Location:	State Office Building 400 West Congress Room 222, South Building Tucson, Arizona
Date:	April 3, 1997
Time:	2 p.m.
Location:	ADEQ Public Meeting Room 3033 North Central Avenue Phoenix, Arizona

The close of comment period is April 4, 1997.

The ADEQ is committed to complying with the Americans with Disabilities Act. If any individual with a disability needs any type of accommodation, please call 602-207-4795 for special accommodations pursuant to the Americans with Disabilities Act. Persons interested in presenting verbal comments, submitting written comments, or obtaining more information on the proposed rules may do so at these meetings. The ADEQ will respond to all issues in the preamble accompanying the final rules.

9. **Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:**
Not applicable.

10. **Incorporations by reference and their location in the rules:**
Not applicable.

11. **The full text of the rules follows:**

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 8. DEPARTMENT OF ENVIRONMENTAL QUALITY
WASTE MANAGEMENT

ARTICLE 1. REMEDIATION ACTION REQUIREMENTS

R18-8-101. Remedial Action Requirements; Level and Extent of Cleanup

ARTICLE 1. REMEDIATION ACTION REQUIREMENTS

R18-8-101. Remediation Action Requirements; Level and Extent of Cleanup

A. This Article is applicable to Chapter 8 of this Title.

B. In any instance where soil remediation is done under this Chapter, it shall be conducted in accordance with A.A.C. R18-7-201 through ~~R18-7-209~~ R18-7-208.